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ABSTRACT

A fourth quarterly report completes one year of the Educational Policy Research Center's (EPRC) analysis and assessment of the Education Satellite Communication demonstration. Activities and accomplishments during the period April 11, 1975-July 10, 1975 are listed and described. The report also includes cost data from the Appalachian Educational Satellite Project (AESP), preliminary results of the EPRC's Survey Panel instrument, and preliminary analytical and historical overview of the AESP. A calendar of future events in satellites, telecommunications, and education is included; a working paper on the context and operation of the AESP is appended. Reders are cautioned that Survey Panel instruments are preliminary, and not yet interpreted or analyzed, and that issues raised in the working paper are open and judgments tentative. (SK)

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FOURTH QUARTERLY PROGRESS REPORT

Contract No. NIE C-74-0145

REPORT OF ACTIVITIES AND ACCOMPLISHMENTS

April 11, 1975 to July 10, 1975

STUDY OF EDUCATION SATELLITE COMMUNICATION DEMONSTRATION

Prepared for:

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July 10, 1975

IR 002 459

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2/3

PREFACE

This fourth quarterly report marks the completion of the first year of the Educational Policy Research Center's analysis and assessment of the Education Satellite Communication Demonstration. The preliminary analysis goals attained during this period have been to develop the data base for the assessment and to explore the range of issues which can be informed by the data.

The present report fills in some gaps left open in earlier reports. These are:

- cost data from the AESP
- preliminary results of the EPRC's Survey Panel instrument
- preliminary analytical and historical overview of the AESP.

The present report thus rounds out the first year's work and sets the stage for the EPRC's Annual Report due in the Fall. The Annual Report will additionally draw from the final reports from the three ESCD projects and from information being currently gathered by EPRC staff.

The reader should note that we intend the four quarterly reports to be taken together as a totality. No single report is, or has been, intended to exhaustively cover the entire scope of our work.

Cautionary remarks are in order regarding two of the pieces in this report. First, Section II is devoted primarily to sharing the preliminary results of the survey panel instrument and not to interpretation and analysis of those results. It is therefore strongly recommended that special attention be paid to the caveats mentioned in the discussion of those results.

4

Second, the Appendix "Working Papers on the Context and Operations of the AESP" is issue-oriented and offers some judgments on what is "knowable" about the project itself and about the potential value of satellites for education. We regard the issues raised in this type of paper as very much open and the judgments as still very tentative.

As with all papers of this type, we expect to circulate this piece among interested persons and groups. We are confident that our thinking will be greatly enriched by this process. For a fuller account of this circulation process, see the "Preface" of our third quarterly report.

TABLE OF CONTENTS

Section — Title — Page

PREFACE i

I SATELLITES, TELECOMMUNICATIONS AND EDUCATION A CALENDAR OF FUTURE EVENTS . . . . I- 1

1.0 Satellite Launches, Uses and Movements. . . . . I- 1
2.0 Legislation . . . . I- 4
3.0 Regulatory Action . . . . I- 5
4.0 Domestic Activities . . . . I- 6
5.0 Conferences . . . . I- 9

II LOCAL ADVISORY PANEL: Preliminary Summary of Responses . . . .II- 1

Appalachia Results .II- 5
Federation of Rocky Mountain States Results. II-29

III ANALYSIS OF COST DATA OF FRMS AND ARC . . . . III- 1

Part I - Introduction. . . . . III- 1
Part II - FRMS/STD Costs . . . . III- 1
Part III - AESP Cost Data Analysis III-35
Part IV - Extending the Analysis III-45

APPENDIX-WORKING PAPER ON THE CONTEXT AND OPERATION OF THE AESP. . . . . A- 1

I - The Historical Context of the AESP . . . . A- 2
II - The Organizational Environment of the AESP A-12
III - The Functional Relationships Within the AESP A-16
IV - The Role of the Satellite in AESP. A-39

TABLE OF CONTENTS

ITEM PAGE

1.0 SATELLITE LAUNCHES, USES AND MOVEMENTS 1
  1.1 APPLICATIONS TECHNOLOGY SATELLITE-6 (ATS-6) 1
  1.2 COMMUNICATIONS TECHNOLOGY SATELLITE (CTS) 1
  1.3 SYMPHONIE 1
  1.4 ALASKA. 1
  1.5 DOMESTIC SATELLITE SYSTEMS. 2

2.0 LEGISLATION. 4
  2.1 THE PUBLIC BROADCASTING FINANCING ACT OF 1975 4
  2.2 THE TELECOMMUNICATION FACILITIES AND DEMONSTRATION ACT OF 1975 4
  2.3 COPYRIGHT REVISION BILL OF 1975 4

3.0 REGULATORY ACTION. 5
  3.1 FEDERAL COMMUNICATIONS COMMISSION 1977 WORLD ADMINISTRATIVE RADIO CONFERENCE. 5

4.0 DOMESTIC ACTIVITIES. 6
  4.1 PUBLIC SERVICE SATELLITE CONSOTRIUM (PSSC). 6
  4.2 CORPORATION FOR PUBLIC BROADCASTING (CPB) 6
  4.3 PUBLIC BROADCASTING SERVICE (PBS) 6
  4.4 CPB/PBS JOINT ACTIVITIES. 6
  4.5 NATIONAL PUBLIC RADIO 7
  4.6 NATIONAL INSTITUTE OF EDUCATION 7
  4.7 NATIONAL SCIENCE FOUNDATION 7
  4.8 OFFICE OF TELECOMMUNICATIONS POLICY 8

5.0 CONFERENCES. 9
  5.1 US-INDIA COMMUNICATION CONFERENCE-NEW DELHI 9
  5.2 JOINT UN/UNESCO REGIONAL SEMINAR. 9
  5.3 INTERNATIONAL TELECOMMUNICATIONS UNION. 9
  5.4 NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS. 9
  5.5 UNITED NATIONS/UNESCO SEMINAR - 1976. 10
  5.6 WORLD ADMINISTRATIVE RADIO CONFERENCE 10

1.0 SATELLITE LAUNCHES, USES AND MOVEMENTS

1.1 APPLICATIONS TECHNOLOGY SATELLITE-6 (ATS-6) (UPDATE)

The National Aeronautics and Space Administration (NASA) has announced that U.S. experimenters may use ATS-6 when it returns to the U.S. at the conclusion of the Indian Satellite Instructional Television Experiment (SITE) in September 1976.

Potential experimenters have been asked to submit letters of interest by July 11, 1975 with final proposals due on August 20, 1975.

A NASA news release suggested that there will be enough reserve fuel on board the ATS-6 to support experiments for at least 6 more years.

1.2 COMMUNICATIONS TECHNOLOGY SATELLITE (CTS) (UPDATE)

Since the last calendar two additional U.S. experiments using CTS have received final approval. This makes the U.S. complement five. (Final approval is contingent on NASA's technical approval and guaranteed external funding.) The first is Project Interchange to be operated by the Archdiocese of San Francisco and the second is an experiment to test a transportable earth terminal conducted by the Westinghouse Corporation.

Ten additional potential U.S. experiments are in various stages of planning.

1.3 SYMPHONIE (NEW ITEM)

The Canadian Minister of Communications has invited provincial governments in Canada and other organizations to submit proposals for international communications experiments using the Symphonie communications satellite. He said Canada may continue to allow experimenters to use earth station facilities free of charge.

1.4 ALASKA (UPDATE)

The State of Alaska and RCA Alaska Communications have signed an agreement to construct 20 satellite earth stations. Subject to another agreement, it is possible that 80 additional earth stations could be completed by 1977.

Plans call for the use of 15-foot dish antennas. This is a compromise between the 10-foot dishes proposed by the State and the 30-foot antennas originally proposed by RCA Alaska.

Services to be provided to the distant rural communities will include telephone and emergency medical communications.

I.5 DOMESTIC SATELLITE SYSTEMS (NEW ITEM)

Much of the following information was kindly supplied by Dr. Joseph Pelton, of INTELSAT.

A number of countries or regional organizations are contemplating domestic or regional satellite systems, some of which may well contain educational television and/or educational radio components. Countries currently operating or planning domestic communications satellite systems are as follows:

DOMESTIC

Algeria: Operating system using INTELSAT satellite.

Brazil: Soon to be operational using INTELSAT satellites, which will be followed by separate system owned and operated by Brazil.

Canada: Operational Telsat system.

Chile: Planned limited service using INTELSAT satellites.

Colombia: Studying domestic system utilizing INTELSAT satellites.

Indonesia: Future domestic system being built by Hughes Aircraft Company.

Iran: Domestic satellite system under study by Stanford Research Institute.

Japan: Two experimental satellite systems are being built. One for direct broadcast television services (NHK) and one for millimeter wave (18/30 GHz) point-to-point domestic communications (NTT). Contractors are General Electric/Toshiba and Philco-Ford/Mitsubishi Electric Company, respectively. The Japanese National Space Development Agency and the U.S. National Aeronatutic and Space Administration have agreed in principle to conclude contracts covering the launch of these satellites from the U.S. The planned date for the communications satellite launch is November 1977 and the broadcasting satellite, February 1978.

Malaysia: Domestic telecommunications services utilizing INTELSAT to be operational third quarter, 1975.

Norway: Operational system utilizing INTELSAT satellites. Service to North Sea and Spitzbergen.

Philippines: Presently considering alternatives for meeting domestic telecommunications services utilizing INTELSAT satellites or by other means.

United States: Variety of U.S. systems in operation or planned, including WESTAR, COMSTAR, COMSAT General/IBM and RCA.

Zaire: Presently planning domestic television network utilizing INTELSAT satellites.

I.5 DOMESTIC SATELLITE SYSTEMS--CONTINUED

REGIONAL SYSTEMS

French/ German Symphonie Program:	Experiments in television and other telecommunications services being performed in variety of locations in the North and South Atlantic Ocean regions.
European Satellite System:	Definition studies for a European Satellite System are being conducted by the European Space Agency as a follow-on to the Orbital Test Satellite (OTS) program.

2.0 LEGISLATION

2.1 THE PUBLIC BROADCASTING FINANCING ACT OF 1975 (UPDATE)

Both bills (HR 6461 and S.893) had provided for five-year authorization and appropriation for the Corporation for Public Broadcasting (CPB). They also provide the same amount of funds, but the formula for matching grants differed in the fourth and fifth years. Also the House Bill required that a "significant portion" of the government money should be allocated to instructional programming.

But the Labor, Health, Education and Welfare Subcommittee of the House Appropriations Committee changed the funding period from five years to three years and removed the appropriation clause. With this legislation the CPB will have to justify its expenditures before the Committee. The Labor HEW Subcommittee of the Senate Appropriation Committee has not yet taken any action, and some delay is possible.

As noted in earlier edition, both bills have a provision of relevance to future satellite activities. They expand the scope of the Public Broadcasting Act of 1967 and allow for the development and use of nonbroadcast communication technologies for the distribution of radio and television material.

2.2 THE TELECOMMUNICATIONS FACILITIES AND DEMONSTRATION ACT OF 1975 (UPDATE)

Hearings on bill HR 4564 have been completed but the bill has not been reported out of the House Interstate and Foreign Commerce Communications Subcommittee.

2.3 COPYRIGHT REVISION BILL OF 1975 (UPDATE)

Comprehensive copyright revision bills are pending in both houses. Both bills (HR 2223 and S.22) remove public broadcasting's exemption from copyright. The Senate Copyright Subcommittee has marked up the bill for consideration by the full Judiciary Committee. The House Judiciary Subcommittee on Courts, Civil Liberties and Administration of Justice is in the process of conducting hearings.

3.0 REGULATORY ACTION

3.1 FEDERAL COMMUNICATIONS COMMISSION 1977 WORLD ADMINISTRATIVE RADIO CONFERENCE (NEW ITEM)

The FCC has initiated a notice of inquiry in preparation for the World Administrative Radio Conference in 1977. Comments on the use of the 11.7-12.2 GHz frequency band for direct satellite to home broadcast services are required by August 1, with replies being due by September 1. Replies and comments will help formulate U.S. policy at the 1977 conference.

4.0 DOMESTIC ACTIVITIES

4.1 PUBLIC SERVICE SATELLITE CONSORTIUM (PSSC) (UPDATE)

A federal grant of $475,000 has been made by the Office of the Secretary of the Department of Health, Education and Welfare (DHEW) to help establish the Public Service Satellite Consortium. Announcement of the grant, which includes support from both DHEW and the National Aeronautics and Space Agency (NASA), was made at a July 1 meeting of the consortium. H. Rex Lee, former FCC Commissioner was named as chief operating officer and chairman until a permanent executive director is found.

The consortium plans to assess the need and market for domestic public satellite service and to determine the technical and financial requirements for its establishment on a continual operational basis. The federal grant will help the consortium initiate policy and technical studies and enable it to create and staff a headquarters in San Diego. The Federation of Rocky Mountain States engineering staff will be contracted to provide technical support.

4.2 CORPORATION FOR PUBLIC BROADCASTING (CPB) (UPDATE)

The CPB board of directors has accepted a report, Public Broadcasting and Education, from the Advisory council of National Organizations (ACNO) and directed that management review the report's recommendations. The board also requested that the CPB Committees on Education, New Technologies and Finance make recommendations as to how the report can be implemented. These are to be ready for the September 1975 meeting of the board of directors.

4.3 PUBLIC BROADCASTING SERVICE (PBS) (NEW ITEM)

The Public Broadcasting Service's $3.85 million budget for 1976 included $140,000 for Phase II of the satellite planning project. The satellite system, in the 4-6 GHz range, could be operational by 1980.

4.4 CPB/PBS JOINT ACTIVITIES (NEW ITEM)

The Corporation for Public Broadcasting (CPB) and Public Broadcasting Service (PBS) have called for bids for 150 satellite earth terminals which would operate in the 4-6 GHz band. The receipt of bids does not mean the CPB/PBS definitely plan to buy the terminals and is only one of several steps being taken in preparation for a full satellite report which will be presented to the CPB and PBS boards this fall.

The satellite working group which includes the presidents of PBS and CPB is also considering legal, scientific regulatory and financial aspects of satellite interconnection.

Interest in the satellite system has increased because the CPB/PBS are nearing the end of their five-year contract with American Telephone and Telegraph (AT&T). Contract renewal will involve a substantial rate increase.

4.5 NATIONAL PUBLIC RADIO (NEW ITEM)

Experiments with and demonstration of satellite interconnection of the 176 member National Public Radio Network have been commenced. Plans involve a six-channel stereo network with a receive-only capability costing approximately $15,000 per station. The ability of transmit back to the network control would cost another $10-12,000 per station. Long-run cost savings, decentralized programming and stereo networking are seen as the potential of such a system.

4.6 NATIONAL INSTITUTE OF EDUCATION (NEW ITEM)

At the time of writing the National Council of Educational Research, the policy-making board of the National Institute of Education (NIE), was meeting to decide on NIE's future involvement in communication satellite activities. It is possible that the NIE will fund the three participants in the Educational Satellite Communications Demonstration, i.e., the Appalachian Regional Commission, the Federation of Rocky Mountain States, and the Governor's Office of Telecommunications in Alaska for an additional year. Possible tasks involve planning for the return of ATS-6 and the maintenance of equipment purchased for the first year of operation.

4.7 NATIONAL SCIENCE FOUNDATION (UPDATE)

The National Science Foundation has approved grants for New York University, the Rand Corporation and Michigan State University, all of which will be used to develop experimental programs on cable TV providing delivery of social services.

The NYU grant, $400,000, will be used to improve the quality of life for senior citizens and improve the effectiveness of city government and social service agencies in Reading, PA. City and NYU officials already are recruiting and training senior citizen and other volunteers to work in three proposed community communications centers.

Rand Corporation will be working under a grant of roughly $1 million for 30 months to provide adult education, day-care center training and inter-institutional communications in Spartanburg, S.C.

Michigan State University has been given $430,000 for a 30-month project to bring five different types of information to viewers in Rockford, Il (including firefighter training, detection and correction of pre-school children's learning disabilities, and public school integration).

4.8 OFFICE OF TELECOMMUNICATIONS POLICY (NEW ITEM)

Initiation of two studies concerned with making more effective use of the radio spectrum have been announced by the Office of Telecommunications Policy (OTP).

The first, "Technical Market and Consumer Impact of Improved Add-on Signalling" is to be conducted by the Denver Research Institute and is scheduled for completion in 1975. They will study the economic and technical possibilities for adding on and improving services on existing television channels. Extra services could include stereophonic or quadrophonic sound, captioning for the hearing impaired, multi-channel audio and data transmission.

The second study to be conducted by the Aerospace Corporation will consider the impact of technical advances on the planning and use of the radio spectrum. The study is planned to improve long-range spectrum planning and management capabilities.

5.0 CONFERENCES

5.1 US-INDIA COMMUNICATION CONFERENCE-NEW DELHI (UPDATE)

This meeting, reported in the last Claendar, has been cancelled and may now take place in Summer 1976.

Sponsored by the Speech Communication Association's Commission for International and Intercultural Communication.

The Conference themes included, among others, American and Indian perspectives of intercultural communication in pluralistic societies, communication and the Indo-American relations, and communication and national development.

Conference Chairman: Dr. Nemi C. Jain, Department of Communication, University of Wisconsin-Milwaukee, Milwaukee, Wisconsin, 53201.

5.2 JOINT UN/UNESCO REGIONAL SEMINAR: (UPDATE)

Satellite Broadcasting Systems for Education and Development

September 2-11, 1975.

Topics will include:
- A review of current experience in the use of communication satellites for education with special reference to Latin America.
- The planning and development of satellite communication systems.
- A discussion of the UNESCO/ITU feasibility study for Latin and Central America.

5.3 INTERNATIONAL TELECOMMUNICATIONS UNION (NEW ITEM)

October 2-8, 1975 Geneva, Switzerland

TELCOM '75 Second World Telecommunication Forum and Exhibition.

5.4 NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS (NEW ITEM)

November 16-19, 1975 Washington, D.C.

Annual convention.

5.5 UNITED NATIONS/UNESCO SEMINAR - 1976 (UPDATE)

The UN Secretariat is considering the possibility of holding a seminar of satellite broadcasting systems for education and development. This would be an interregional seminar for the benefit of States in the ESCAP and ECWA regions which are specifically interested in using satellite instructional television systems for education and development.

5.6 WORLD ADMINISTRATIVE RADIO CONFERENCE (NEW ITEM)

Approximately April, 1977 Geneva, Switzerland

Agenda includes consideration of the 11.7-12.2 GHz frequency band part of which is allocated to satellite services. (See Item 3.1.)

SECTION II

Local Advisory Panel: Preliminary Summary of Responses

The section which follows contains summaries of the first round of responses to questions submitted to EPRC's Local Advisory Panel on the Educational Satellite Communications Demonstration (ESCD). Responses are submitted separately for the Rocky Mountain and Appalachian regions. The responses from the Alaskan sample, which arrived too late for inclusion here, will be described in our forthcoming annual report.

The Local Advisory Panel was created in order to supplement EPRC's data on the ESCD, which comes primarily from two sources; ESCD project personnel and direct field observations. The panel method was chosen because it provides the opportunity for repeated contact with a relatively small number of teachers, school administrators and others who were participants or observers of the demonstrations at the local level.

There will be at least two additional sets of questionnaires addressed to panelists. This first set of questions was seen as a way of helping EPRC understand how teachers and school administrators perceive issues related to educational television and satellite-based services. It was not intended to provide definitive conclusions on the demonstrations themselves, and readers are urged to exercise caution in drawing conclusions from the responses.

The summaries which follow for each region will be sent to all panelists in the appropriate region. We have attempted to keep interpretive comments to a minimum, except where needed for clarity or to remind readers of the limitations of the present data.

We are analyzing the data for insights on satellite-related issues, of course, and will present our conclusions in later reports. We anticipate that one of the most important uses of this round of panel responses will be in giving panelists our tentative conclusions to react to in future rounds.

The remainder of this introduction provides a brief summary of the panel composition and the way in which the first round of responses were compiled.

Composition of the Panel

A random selection was made of sites to be included in the drawing of the Panel. For the Appalachian region, this effort included controlling for the type of course offered, and the semester in which it was offered. Letters of invitation to participate in the Local Advisory Panel were sent out to teachers, administrators, school board members and other personnel related to the satellite demonstration in these selected sites. Because lists of participants in the Huntsville, Alabama, site were not made available to EPRC, no letters of invitation were sent to this site. Questionnaires were sent only to those who had expressed willingness to participate as members of the panel. (Due to pressures of time, one set of invitation letters was sent to participants in Tennessee at the same time as the Questionnaire.)

A total of 123 individuals participated in the study: 44 from the Rocky Mountain region, and 79 from the Appalachian region.* (This does not include respondents in Alaska.) The Federation and Appalachian sample included teachers and administrators at both interactive and receive-only sites. The sample also included individuals with varying degrees of familiarity with the satellite project. For instance, Rocky Mountain teachers who did not use the satellite programs in their own classes, but who were members of staff in schools which received satellite-delivered programs, were included in the Local Advisory Panel. Their inclusion in the Panel was based on the assumption that individuals not directly involved in the ECSD may have had observations and opinions relevant to EPRC's research. These variations in location and in familiarity with the ECSD should be kept in mind when the results are examined.

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*Not all those who had indicated that they would be willing to participate as members of the Local Advisory Panel returned the questionnaires which had been set to them for completion, although reminder notices were sent out by EPRC. A total of 206 respondents had indicated willingness to participate in the panel: 63 from the Rocky Mountain region, and 142 from Appalachia. There has been no telephone follow-up on those who failed to complete the questionnaire.

Local Advisory Panel Responses

1. The responses of the Appalachian and Rocky Mountain panels are presented separately. Even though some questions for each region may appear to be equivalent, they may refer to different uses of the satellite and to different program content.
2. The results list the number of respondents to each question. This number may not coincide with the number of issues mentioned in open-ended questions. This is because each respondent frequently mentioned more than one issue in his or her answer. Also, because many of the follow-up questions depend on "yes" or "no" responses to earlier questions, not all panelists were eligible to answer all further questions on a particular issue. Finally, respondents sometimes failed

to respond to some questions, or mistakenly responded to questions for which they were ineligible. This also alters the total respondent figure per question.

3. The scoring of the open-ended responses: These responses were scored by two scorers independently. The responses for each question were read in their entirety in order to arrive at the coding schedule. Responses which were assigned different codes by each of the two scorers were discussed until a consensus was reached. No statistical measures of the inter-subjective reliability of coding judgments were sought.

SUMMARY OF LOCAL ADVISORY PANEL RESULTS

APPALACHIA

1. Did you have any experience with instructional television prior to the satellite project in your region?

/32/ Yes /34/ No

IF YES: (a) What has been your experience with instructional television prior to the use of the satellite? (Check any boxes which apply.)

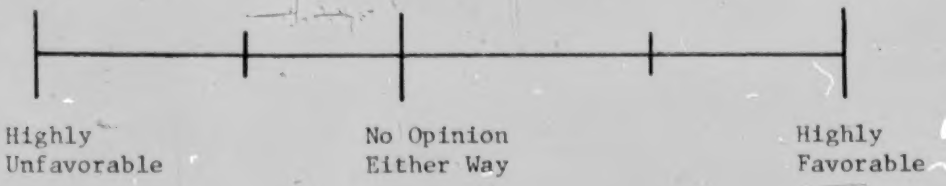
Using it (as a teacher) with students	1	For a one-semester course
	20	For more than a one-semester course
As an administrator in a school using instructional television	0	For one year or less
	6	For more than one year
Taking a course which was offered by television	10	One course
	2	More than one course
Taking a course on ways to use instructional television	6	One course
	3	More than one course

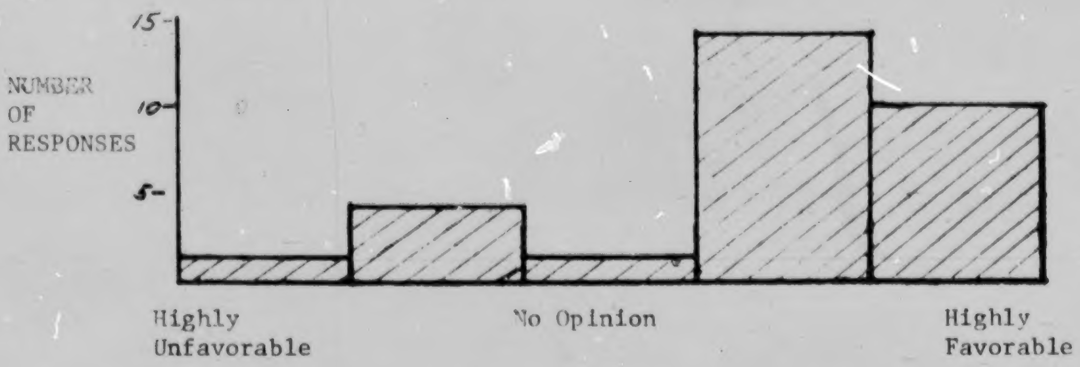
Please explain if you have had any other experience with instructional television: (Open-ended.)

Issue	Number of Times Issue Mentioned
Actual production.	6
Theoretical--in workshops, courses.	5
Use as a teaching tool.	5

Number of respondents: 16.

1. IF YES: (b) Over all, what was your reaction to your prior experience with instructional television? (Please circle one of the five points below.)


Highly Unfavorable
No Opinion Either Way
Highly Favorable



REACTION TO PRIOR EXPERIENCE

Number of Respondents: 32.

IF YES: Please specify what aspects of your prior experience led you to respond as you did: (Open-ended.)

Issue	Number of Times Issue Mentioned
Content of course--includes saying it was a good supplement.	13
Utility as teaching tool.	10
Inappropriate response.	7
Lack of utility as teaching tool.	4

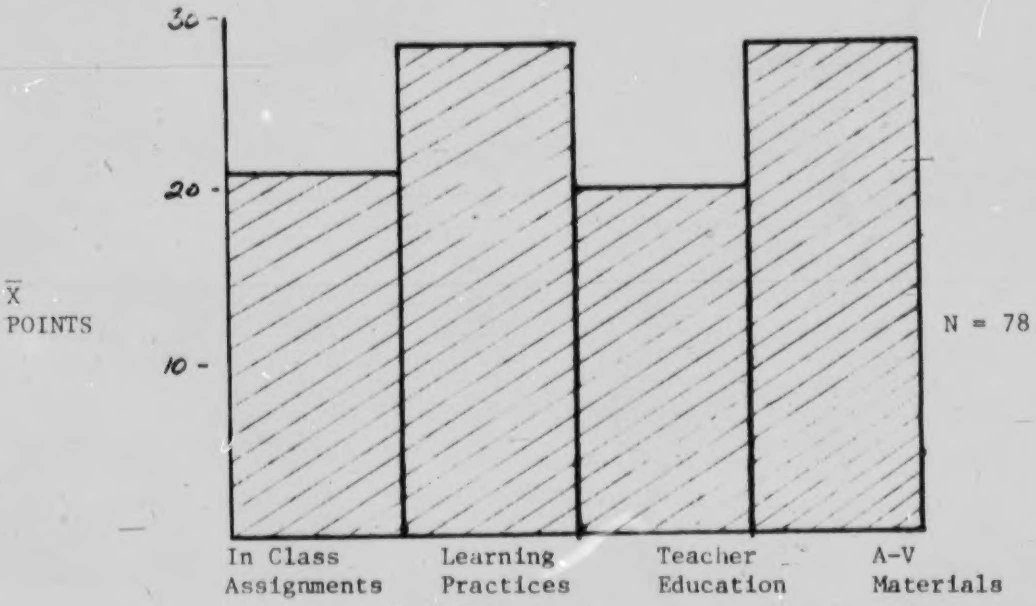
Number of Respondents: 32.

Approximately 41 percent of the respondents in the Appalachian region had some prior experience with instructional television. Of these, three-quarters reported that their prior experience had left them with a favorable impression of instructional television. The reasons cited for this impression were the utility of television as a teaching tool, as well as the content of the courses which could be offered via this medium.

2. In the area where you work, there are many efforts to improve the learning environment of children. Although all of these efforts are valuable, some make a greater contribution to the goals you have in mind for your children than do others.

Distribute 100 points among the improvement efforts listed below. Assign more points to those you think are likely to make a bigger impact on the quality of your teaching, and less points to those you think are likely to make a lesser impact.

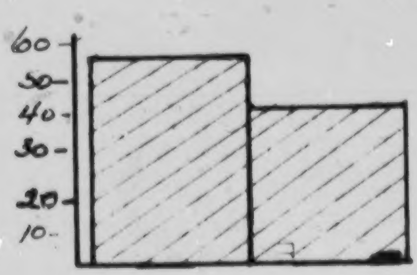
$\bar{X}$	
21	In-class assistance in adopting new teaching techniques.
28	Learning activity packages for classroom use with students.
20	In-service teacher education.
28	Audio-visual aids/materials for classroom use with students.
97	Points total.



IMPROVEMENTS TO LEARNING

$\bar{X}$	21	28	20	28
S	13.8	13.7	11.7	15.3

There were some differences between the mean rankings of various efforts designed to improve the learning environment for children. Materials for use in the classroom were preferred over professional assistance or training, but the difference was fairly small. When the two material services were tabulated as one category and the two professional assistance choices as another category, the preferences appear to be clearly in favor of materials (see below). While the materials services were preferred overall, their rankings by individual respondents fell over a wider range than those for professional activities. It is difficult to make a judgment from these data about respondents' views of the improvement efforts most likely to make an impact on the quality of their teaching. Individual differences were great.



N = 76

	Materials	Professional Training
$\overline{X}$	57	42
S	16.9	16.9

3. In your opinion, was the present satellite project as helpful as it might have been in providing skills and information useful for your teaching?[*]

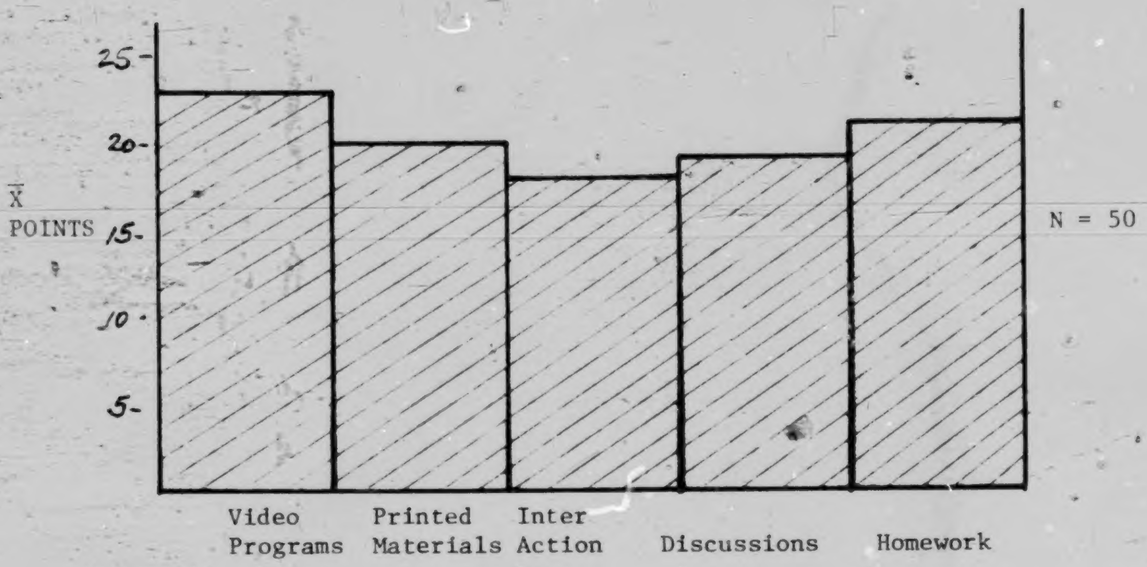
/42/ Yes /24/ No /5/ Uncertain

IF YES: How would you rank the contribution made to learning by the following factors? (Please distribute 100 points among the five choices; give the most points to the most important source of learning and the least points to the least important.

$\bar{X}$	
23	The video-taped television programs.
20	The printed materials accompanying the broadcasts.
18	The live interaction seminar.
19	Discussion or other in-class activities initiated by the coordinator.
20	Pre-program preparation; homework.
100	Points total (approximately).

---

[*] Note that the first part of question 3 refers to information useful to teaching, while the second part (see over) refers to the contribution of various components of the satellite project to learning. This is a weakness in the question and may have been confusing for panelists, though none remarked on it in the column provided for comments. One respondent did note a more serious problem with this question: "(The answer to this question) is really yes and no if answered honestly. Yes it was as helpful as it could have been for a full-time effort, but no there are definite ways to improve the programming and concept given reasonable time and money."



$\overline{X}$	23	20	18	19	20
S	10.7	12.4	12.4	13.3	13.9

FACTORS CONTRIBUTING TO LEARNING

3. IF NO: Why did you feel it was not as useful as it might have been? (Open-ended.)

Issue	Number of Times Issue Mentioned
/CONTENT:/	/16/ Total
Content	11
Culturally inappropriate or inappropriate to the age of the children to be taught	5
/ON-SITE MANAGEMENT/	/11/ Total
Poor leadership on-site.	8
Lack of discussion in class.	2
General points about follow-up.	1
/SEMINAR/	/5 / Total
Poor quality of seminar, panel discussions.	2
Not a seminar: no feedback on questions, not enough live interaction.	2
Unavailable format: poorly regarded.	1

Number of Respondents: 34.

Fifty of the 71 respondents to this question answered that the present satellite project was as helpful as it could have been in providing skills and information relevant to their teaching. When these 50 were asked to specify which aspects of the project were more important in helping them learn skills and information which they found relevant, there was no indication that any particular aspect of the instruction dominated as an important source of learning. All were rated approximately equal in importance.

There were minimal differences between the mean rankings for the five components of the satellite project, with the video programs and the printed materials coming out slightly ahead of the other factors. But again, it should be noted that the differences between these rankings were small and the between-individual differences large.

Those who felt that the satellite project was not as helpful as it might have been were asked to describe some of their reasons for holding that view. They most frequently cited the content of the programs and poor leadership provided by the site coordinators as the reasons for their dissatisfaction. For instance, one respondent wrote that the project programs had "A lot of discussion, but very little actual application of ideas practical to this (Appalachian) area. Too highbrow for back areas." Another respondent, writing on the same theme, said "...More specifics of 'how' and samples of various situations and how to deal with them would have been more useful." Some respondents noted that although the content of programs was not directly related to their classroom activities, they found that it could still be used by them. For example, "We do not as yet have a career education program in our school. However, I use many ideas and materials made available during this class," or "some of the guest lecturers were very good and had valid presentations while others seem irrelevant."

On the topic of site-coordinators, one respondent wrote: "No personal interaction between knowledgable instructor and participants. Person running the course was not an expert on the topic." The respondents who mentioned the interaction component of the satellite project focused primarily on the fact that it was "not really an interaction": "We did not have live seminars. Ours were dull, roundtable conversations," or "The live seminars were not interaction as we could not get definite answers to questions."

4. If educational television broadcasts by satellite were to become more common, what would you hope would happen as a result? (Open-ended.)

Issue	Nunber of Times Issue Mentioned
Wider variety of courses available to teachers and students: same target audience.	21
/IN-SERVICE TRAINING/	/18/ Total
More in-service training	14
Different (more practical specialized, better planned) in-service training.	4
Non-specific responses.	15
Target audience broadened, same courses.	12
Diversity of instructional methods; better education.	12
Responsibilities of teacher lightened.	4
Provide tape libraries.	1

Number of Respondents: 78

Many of responses referred to the belief that the greatest benefit which could accrue from more extensive use of the satellite would be that a greater variety of courses, subjects and ideas would become available to teachers and students. Teacher training and variation in instructional format offered by the satellite were also frequently cited benefits.

For instance, one respondent wrote that hopefully, with extended use of satellites, "Schools would make more use of the programs to expand the students' knowledge outside of the rural environment." Another wrote, "A good variety of programs to supplement classroom activities to meet individual and group needs for students and teachers." On the teacher training issue, one respondent hoped that, "Graduate level programs leading to advanced degrees would become available. These would enable teachers and educators in rural, isolated areas to embark on structured educational programs."

Many of the answers to this question were very general. Those which were vague or general from any meaningful response class were coded as "non-specific responses." For example, one respondent wrote "We would receive more community participation," another "I would hope that the programs would be as fine as possible an example of good educational teaching--not latched onto a panel or lecture format, but making use of the marvelous freedom television gives educators," and yet another "More parents would become involved in the education of our children and that our parents would become more knowledgable about what happens in the learning process."

5. If educational television broadcasts by satellite were to become more common, what would you be afraid might happen as a result? (Open-ended.)

Issue	Number of Times Issue Mentioned
/DEPENDENCE:/	/40/
Student dependence on TV.	1
Teacher dependence on TV/misuse of TV by teacher.	14
Classroom interaction suffers from too much dependence on TV/depersonalization.	16
General dependence on TV.	5
Loss of student interest in normal classroom, TV programs.	4
Information not relevant to content of courses: quality of program may not be good.	18
Loss of local control of schools and curriculum due to content of programs.	7
Non-specific responses.	7
Misuse of teachers: replace them, etc.	4
No fears.	4
Cost.	3

Number of Respondents: 75

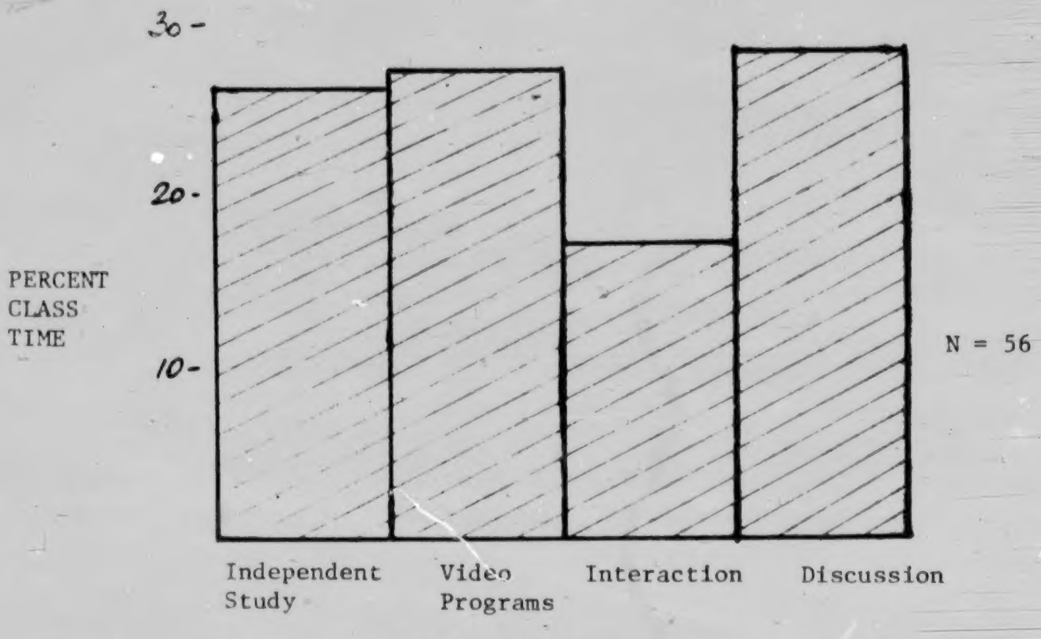
The most frequently expressed concern was that teachers and students would become too dependent on television. There was also some concern that the information offered via satellite would not be relevant to the needs of those who were to receive it. Along the concern of relevance went the fears of the loss of local control of the school curriculum. One respondent writing on the possibility of too much dependence on televised instruction wrote, "Teachers might rely on it to teach rather than using it as a teaching tool." Another wrote, "I'm afraid TV may be used to teach a lesson which really needs a teacher. TV may become a 'babysitter' in the classroom." A note of optimism was struck by one respondent, however, who wrote, "I'm not afraid of what *might* happen when we look at what we have done in the name of education in the past."

It is interesting to note that most of the respondents were teachers, and yet some of the "fears" mentioned centered on their *own* misuse of the medium. Others referred to the reduction of in-class interaction which might result from administrative decisions for increased use of television. Another set of administrative decisions which did concern respondents were those containing the potential for loss of control of the quality or content of the programs. Some respondents mentioned the possibility of "poorly planned programs" or "standardized curriculum which wouldn't provide for varying needs. A trend toward depersonalization."

6. How many minutes of your normal class period would you like to see spent on each of the following activities? (Please write the number of minutes beside each of the activities, and indicate the total duration of a class period in the space provided.)

A typical class period is _____ minutes. I would divide the period in the following way:

$\bar{X}$	
26	Participating-teacher independent study.
27	Video-taped television programs.
17	Live interaction seminar via satellite.
28	In-class discussion
98	



CLASS ACTIVITIES

$\bar{X}$	26	27	17	28
S	14.8	13.3	10.3	11.3

There was minimal difference between the mean percentage rankings for three of the four alternatives offered in this question. Because the total number of minutes allowed by respondents for a class varied from 180 to 30 minutes, it is difficult to determine whether the respondents saw the question as referring to classes in which they were students versus classes which they were teaching.

The interaction received the lowest allocation of class time. However, the between-respondent variance was sufficiently large, and the number of percentage points difference between three of the four alternatives so small, as to preclude making a judgment about preference for any particular in-class activity.

It should be noted, moreover, that allocation of class time is not the same as a ranking of our activity's importance, e.g., an activity taking only a small amount of time may nevertheless be perceived as highly useful.

7. Given your expectations of this satellite project, what additional assistance would you have liked to receive during the course of the project? (Open-ended.)

Issue	Number of Times Issue Mentioned
/PROGRAM CONTENT/	/20/ Total
Programs where examples of materials are being shown.	5
More specific ideas in programs, more relevant content.	15
/On-site instructor./	/18/
/MANAGEMENT/	/11/ Total
Feedback by the University of Kentucky on materials submitted by teachers.	2
Responsiveness to questions.	4
Management (general).	5
/RESOURCES/	/10/ Total
Teacher guides to programs for kids, teachers.	3
Achieve materials mentioned on programs.	6
Equipment, time.	1
Satellite interaction: More (5), less (3).	8
Non-specific responses.	8
No assistance.	4

Number of Respondents: 72

The greatest demand for assistance was for an on-site instructor; the next strongest was for more specific ideas and more relevant content in the programs. This result is consistent with the criticisms of the project mentioned in response to Question 3. The dissatisfaction with the on-site coordinator was expressed quite unambiguously in one response to this question:

"I would like an instructor who understands what the program is all about. One whole class was *very upset* over this weakness." Respondents mentioned management issues such as too great time lags between the time materials were sent in and were returned by the University of Kentucky. One respondent, whose views reflected many of the concerns raised by other Appalachian participants in the Local Advisory Panel, wrote that the assistance which would have been useful would have included, "Lessons plans in advance so students could seek information helpful to understanding. Follow-up activities that are creative. An enthusiastic teacher who generates interest and active participation. Classroom ideas that can be taken back for general use. Better room and physical arrangement for the class. TV panels of teachers rather than administrators...".

8. Satellites can be used for education in a number of ways. Assuming it were possible to have video tapes and satellite broadcasts of high quality, national experts and film clips of teachers in actual classrooms, which of the following ways of offering courses via satellite do you think would be most valuable for a graduate level course? (Please rank both sets of alternatives below.)

(a) Please rank the alternatives below so that 1 indicates the most desirable way of offering courses and 3 indicates the least desirable way.

	RANKING		
	1	2	3
Courses useing video-tape cassettes with audience interaction via satellite and teletype.	41	34	3
Satellite-based television broadcasts with interaction via satellite and teletype.	35	42	1
Satellite-based television broadcasts with no interaction	2	2	74

A general characteristic of ranking questions should be noted. While the frequency count indicates how many panelists gave a response category a particular ranking, it does not indicate the strength with which this preference was held.

There was consensus about the undesirability of having only satellite broadcases without interaction. As the question was worded, interaction was included in both other alternatives without any offsetting disadvantages, so this result is not surprising.

There was some preference expressed for use of video-tapes cassettes rather than satellites to deliver the pre-taped portions of a lesson. We do not know if this difference should be regarded as important.

8(b) Please rank the alternatives below so that 1 indicates the most desirable way of offering courses and 3 indicates the least desirable way.

	RANKING		
	1	2	3
Offer satellite-based television course to a small number of classes at a time, with a large amount of participating-teacher interaction via satellite and teletype.	52	19	7
Offer satellite-based television courses to a large number of classes at a time, with a small amount of participating-teacher interaction via satellite.	17	50	10
Offer satellite-based television courses to be video-taped by a large number of receiving sites and replayed at their convenience, with no interaction via satellite or teletype.	9	9	61

N = 78

The responses to the preceding question show a clear preference among Appalachian teachers participating in the ESCD for options including significant amounts of interaction via satellite. It might be noted that the "no interaction" option received considerably more "1" and "2" rankings than in question 8(a), perhaps because the notion of flexibility of scheduling was introduced in 8(b) but omitted from the preceding question.

9. Assume that you have access to satellite television and that you can select programs and schedules which fit your needs. Assume also that the cost is being met at the federal or state level.

Could you use television to substitute for anything being done in the organization in which you now work (school district, division or university), or to replace any of the resources now being used? (Open-ended.)

/62/ Yes /15/ No

Issue	Number of Times Issue Mentioned
Teacher training.	30
Enrich.	21
Replace teachers and textbooks.	11
Aspects of all course areas which involve demonstrations.	3
Replace current AV.	2

N = 60

Despite the large number of respondents saying that they could use television to substitute for current organizational activities, it was evident on an examination of the responses that most of the respondents answered that they thought the satellite capabilities could not be used to replace or to substitute for resources currently being used in their own organizations. Most did feel that the satellite could be used to enrich school and university activities. The issue most frequently mentioned was the use of satellites for teacher training--in other words, continuing to use the satellite in the way it has already been used. This response may indicate that respondents were very satisfied with the potential of satellites as replacements for university courses. It could also indicate that respondents had few ideas about other uses for satellites. Some respondents mentioned that the satellite could be used to replace teachers and textbooks. These responses were in the minority, however.

10. As in Question 9, assume that you have access to satellite broadcasts which fit your local needs, and that the costs are met by state or federal funds.

Could you use television to enrich or augment your present in-service or division programs? (Open-ended.)

/72/ Yes /2 / No

Most of the answers to this question identified particular subject areas for which the satellite broadcasts should be used. Almost half of the respondents stated that they felt TV would enrich or augment in-service training in their districts.* Some of the suggestions referred to the value of seeing actual classrooms and programs in action. A number of others cited the need for exposure of new ideas and methods. "You could show programs working, and ways to enrich the curriculum," or "Resource information. Secure new ideas from other teachers and programs." Some respondents felt that the satellite was an excellent way to present in-service programs of high quality which local school districts could not afford--especially in such areas as foreign languages, special education. "I feel that the quality of the in-service program could be greatly enhanced. Many school districts cannot afford quality personnel for an in-service program. This is one way that the best could be presented." Others mentioned special topics they felt would be enriched. Metric education, special topics, science, social studies and typing were mentioned; several others mentioned the need for programs for the abler student.

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*No tabulation, because responses did not lend themselves to classification.

11. If your RESA were to seek funds for the following projects, in your ~~opinion which should have the highest~~ priority? (Please put 1 to indicate your highest priority, and 4 to indicate your lowest priority.)

	RANKING			
	1	2	3	4
Improvements or expansions of school buildings in the area (e.g., vocational, technical or special education facilities).	19	11	11	33
Televised programs to serve the purpose(s) you listed in Question 10.	18	19	23	15
Non-television educational materials or activities (e.g., more library books, laboratory equipment, audio-visual materials).	20	19	22	14
Psychological services, special education or preschool programs.	18	26	19	13

N = 75

None of the alternatives listed in this question were accorded standing as a clear first preference. As the table makes clear, if the first rankings (1 and 2) are combined, psychological services would be ranked as first preference. The school building ranking (as is the case with the other response alternatives) may be accounted for in part by variations in local school conditions. In other words, it may be that in those districts with good schools, psychological services, etc., these services are not viewed as a top priority for fund allocations.

Other priorities mentioned by respondents were in-service training or planning of courses by teachers (eight respondents). One respondent cited the need for paraprofessionals, while three others wrote that they would give equal priority to all choices because the need which exists in each of the areas listed in this question.

SUMMARY OF LOCAL ADVISORY PANEL RESULTS

FEDERATION OF ROCKY MOUNTAIN STATES

1. Did you have any experience with instructional television prior to the satellite project in your region?

/11/ Yes /33/ No

IF YES: (a) What has been your experience with instructional television prior to the use of the satellite? (Check any boxes which apply.)

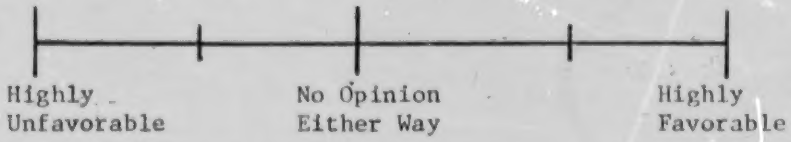
Using it (as a teacher with students)	4	For a one-semester course.
	1	For more than a one-semester course
As an administrator in a school using instructional television.	3	For one year or less.
	0	For more than one year.
Taking a course which was offered by television	5	One course.
	0	More than one course.
Taking a course on ways to use instructional television	3	One course.
	0	More than one course.

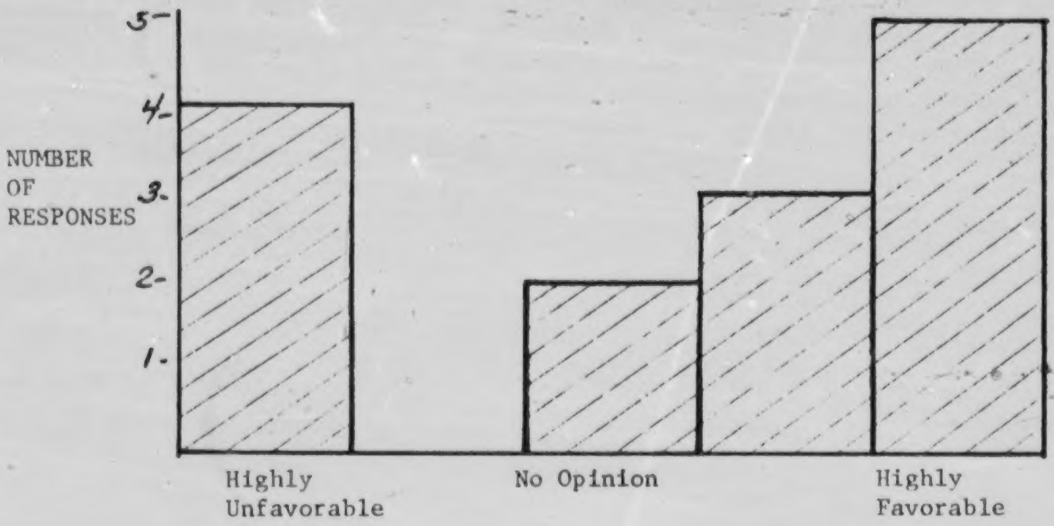
Please explain if you have had any other experience with instructional television: (Open-ended.)

Issue	Number of Times Issue Mentioned
Actual production.	7
Use as a teaching tool.	6
Theoretical -- in workshops, courses.	2

Number of Respondents: 9.

1. IF YES: (b) Over all, what was your reaction to your prior experience with instructional television? (Please circle one of the five points below.)


Highly Unfavorable
No Opinion Either Way
Highly Favorable



REACTION TO PRIOR EXPERIENCE

Number of Respondents: 14

IF YES: Please specify what aspects of your prior experience led you to respond as you did: (Open-ended.)

Issue	Number of Times Issue Mentioned
Content of course--includes saying it was a good supplement.	5
Utility as teaching tool.	3
Lack of utility as teaching tool.	1
Non-specific response.	2

Number of Respondents: 11.

Eleven of the forty-four respondents reported that they had had some prior experience with instructional television. Twice as many had favorable as unfavorable reactions to it. The reason most often cited for favorable reactions was that the content of the courses offered by television provided a good supplement to courses already being offered.

2. Do you think that the "Time-Out" series was useful for student listening?

/17/ Not Applicable

/23/ Yes /3/ No /1/ Undecided

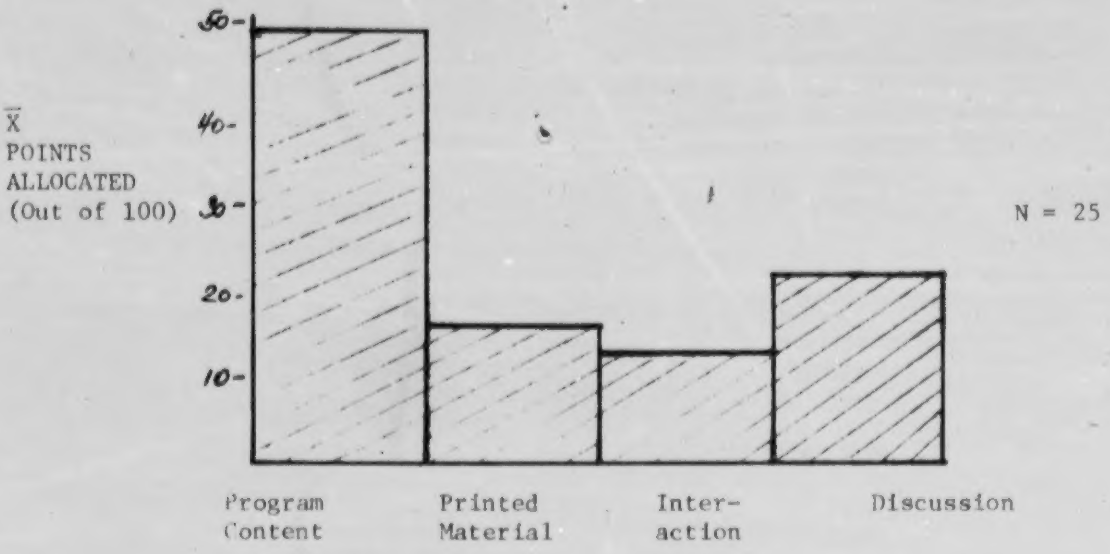
(a) IF EITHER YES OR NO: What kind of information or observations convinced you that "Time-Out" was (or was not) useful for student learning? (Open-ended.)

Issue	Number of Times Issue Mentioned
BY THOSE WHO ANSWERED "YES"	
Broadened sense of problems or information by students.	8
Student attention.	4
Ability of students to assess themselves, their needs, etc.	4
Program content good.	4
Scheduling of programs.	1
BY THOSE WHO ANSWERED "NO"	
Program content bad.	3
Lack of student attention.	2
Non-specific responses.	3

Number of Respondents: 24.

2. (b) IF YES: How would you rank the contribution to students learning made by the following components of "Time-Out." (Please distribute 100 points among the four choices; give the most points to the most important source of learning and the least points to the least important.)

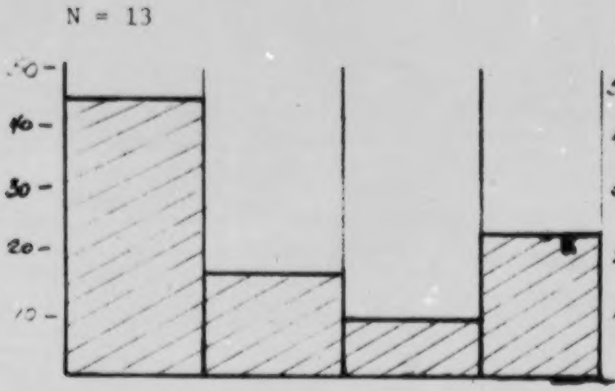
$\bar{X}$	
49	The televised program content.
16	The printed material accompanying the broadcasts.
13	The live interaction via satellite.
22	Discussion of other activities initiated by the teacher.
100	Points total (approximately)



$\bar{X}$	49	16	13	22
S	19.1	11.0	14.6	14.6

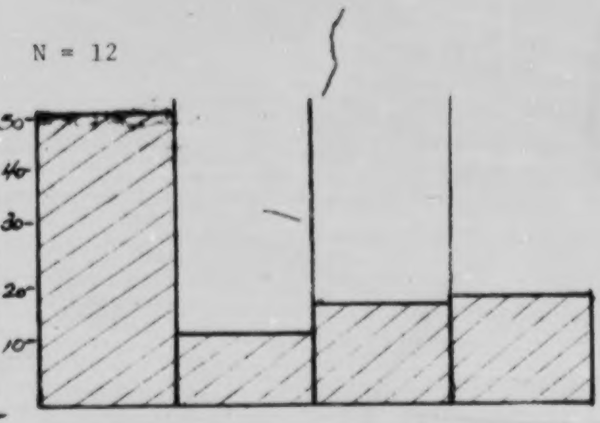
"TIME OUT" COMPONENT

FIGURE 1. TOTAL RECEIVE-ONLY AND INTERACTIVE SITES



$\overline{X}$	47	18	10	25
S	11.7	10.6	12.2	15.4

FIGURE 2. RECEIVE ONLY



$\overline{X}$	51	13	17	19
S	25.1	11.1	16.6	13.7

FIGURE 3. INTERACTIVE

Of the 27 respondents who had received the "Time Out" series, 23 said they believed the series was "useful" to student learning. Some respondents were of the opinion that the students had gained a sense of the problems related to career choices, as well as a broadened information base regarding career opportunities. For instance, one respondent wrote, "It ('Time Out') got the students really interested in just what they would be doing after high school. Also, that there is more to a job than just money." Other respondents said that they felt the programs gave students the ability to assess themselves and their needs. A school counsellor wrote that, "Student classwork reflected increased knowledge of careers and of decision-making. The student told me that the self-assessment material had helped her understand herself and her friends better. Students also asked questions on field trips that indicated they were learning from programs." Yet other respondents cited student attention (or lack of it) as an indicator of whether or not the program was useful for student learning.

When asked to rank the contributions to student learning of various components of the "Time Out" series, the Local Advisory Panel members ranked content of the programs as the highest contributor, followed by class activities. Program content was clearly seen by the respondents to be the greatest contributor. It would seem reasonable to expect that program content would be cited as the greatest contributor, considering that the greatest proportion of class time absorbed by the television programming. The printed materials and the interaction components were ranked lowest.

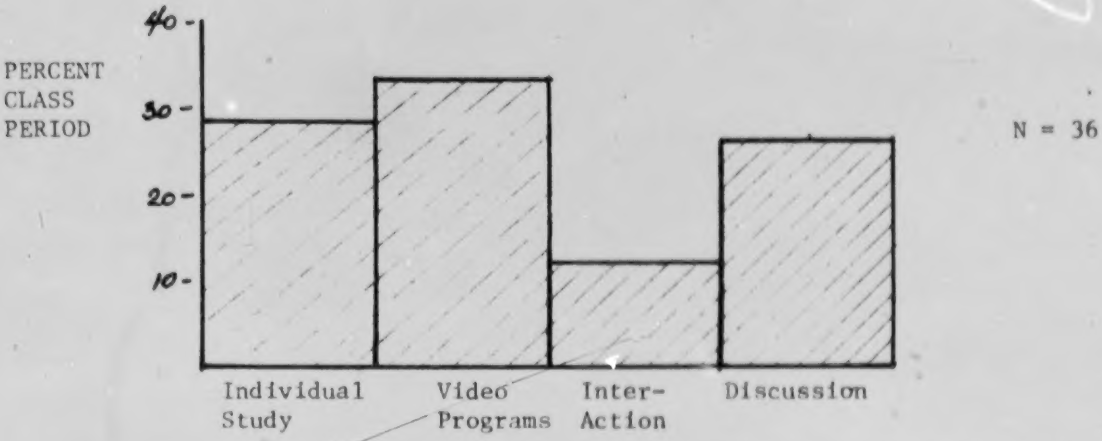
3. How many minutes of the normal period of classes you teach would you like to see spent on each of the following activities? (Please write the number beside each of the activities, and indicate the total duration of a class period in the space provided.)

A typical class period is _____ minutes. I would divide the period in the following way:

$\bar{X}$ percent class period.

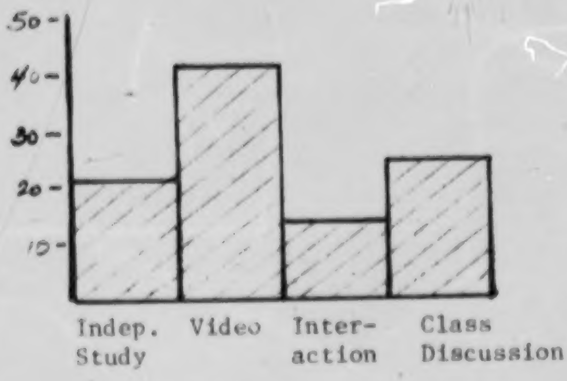
28 Student independent study.
33 Video-taped television programs.
12 Live interaction period via satellite.
26 Class discussion.

99 Points total



$\bar{X}$	28	33	12	26
S	19.4	18.7	10.4	14.2

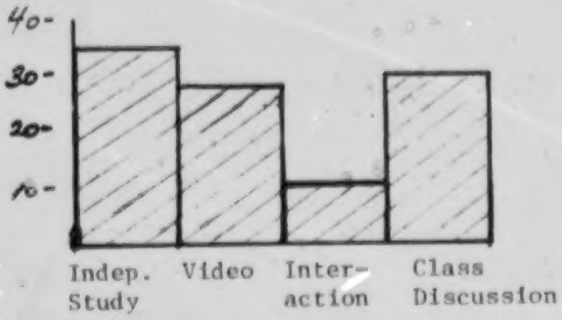
FIGURE 2. RECEIVE ONLY AND INTERACTIVE SETS



N = 16

$\overline{X}$	21	41	14	24
S	19.7	17.8	11.8	15.7

FIGURE 2. INTERACTIVE SITES



N = 20

$\overline{X}$	34	27	10	29
S	17.3	17.1	9.1	12.7

FIGURE 3. RECEIVE ONLY SITES

Video-taped television programs were given the greatest proportion of class time by the respondents overall, though there was a difference between those at receive-only and interactive sites when the response totals were disaggregated. Respondents who did not have access to the two-way equipment of the satellite project tended to allocate more time to non-satellite components--that is, to class discussion and independent study. The total percentage of class time allocated for these two activities is 63 percent for the receive-only sites compared with 45 percent for the interactive sites. However, the interactive site respondents allocated a much greater proportion of class time to video-taped programs than did the panelists at receive-only sites.

4. In your opinion was the "Careers in the Classroom" component of the present satellite project as useful as it might have been in providing information relevant to your teaching?*

/12/ Yes /13/ No /3/ Undecided

IF NO: Why do you feel it was not as useful as it might have been? (Open-ended.)

Issue	Number of Times Issue Mentioned
Content of programs too theoretical and, therefore, programs inappropriate.	7
Grade level and age level pitch on programs inappropriate.	4
Non-specific response.	4
Scheduling bad.	2

Number of Respondents: 17.

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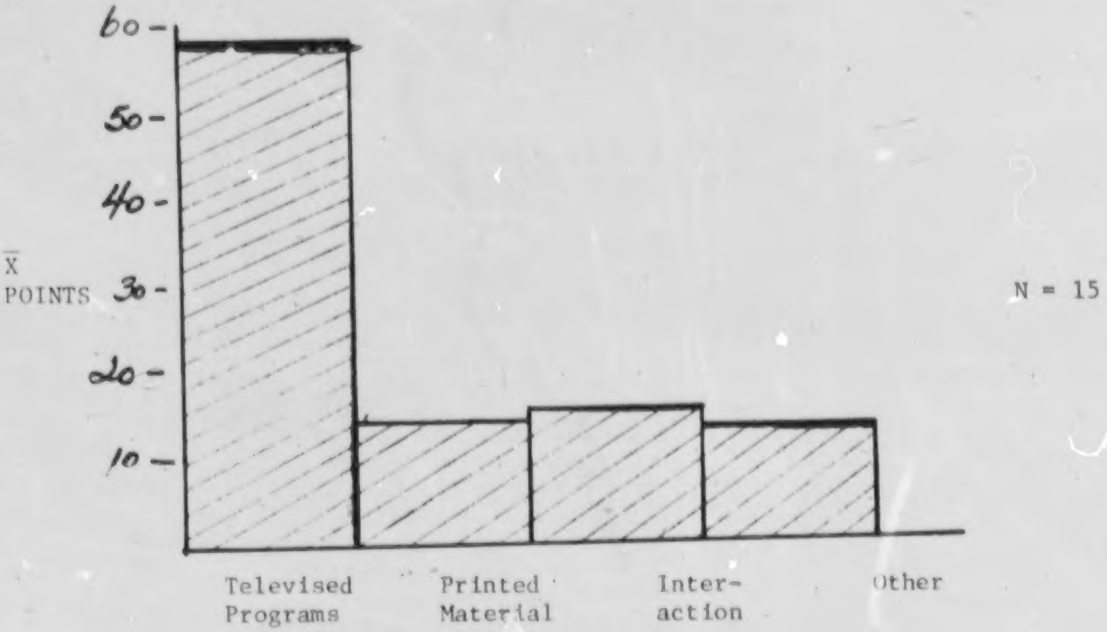
[*] Note that the first part of question 4 refers to information useful to teaching, while the second part (see over) refers to the contribution of various components of the satellite project to learning. This is a weakness in the question, and may have been confusing for the panelists, though none of the Rocky Mountain respondents mentioned it.

Note also that the question is ambiguous: i.e., it can be interpreted as asking "Did you feel the satellite project was beyond improvement?" or alternatively, "Did you feel that the satellite project was reasonably useful?"

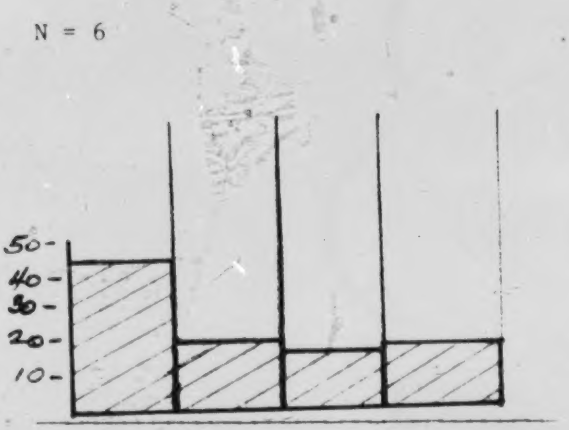
4. IF YES: How would you rank the contribution made to your learning by the following factors? (Please distribute 100 points among the four choices; give the most points to the most important source of learning and the least points to the least important.)

$\bar{X}$	
58	The televised programs.
14	The printed material accompanying the broadcasts.
15	The live interaction via satellite.
13	Other (e.g., discussions with fellow class members).
100	Points total (approximately).



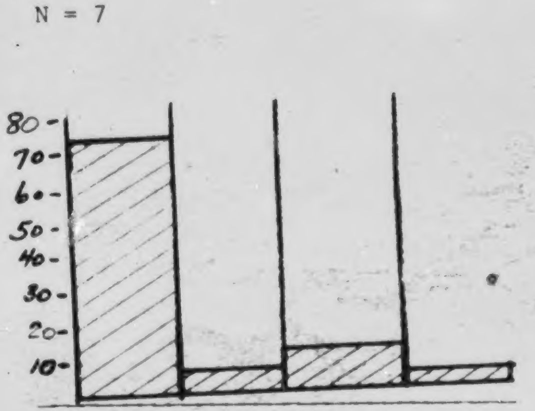
$\bar{X}$	58	14	15	13
S	22.9	19.7	14.1	14.3

FIGURE 1. RECEIVE-ONLY AND INTERACTIVE SITES



$\overline{X}$	44	20	16	19
S	13.8	11.4	9.2	15.0

FIGURE 2. RECEIVE ONLY



$\overline{X}$	74	7	13	5
S	22.1	7.8	17.8	7.4

FIGURE 3. INTERACTIVE

Opinions regarding the usefulness of the program were divided fairly evenly between those who felt that "Careers in the Classroom" did provide information relevant to teachers and those who felt it did not. When asked for their reasons, those who did not find the program useful most frequently referred to the content of the programs, saying that it was either too theoretical for them, and therefore irrelevant, or that the grade levels dealt with by the programs were inappropriate for the respondents' particular needs. For instance, respondents felt that there was "A lot of discussion (in the programs), but very little actual application of ideas practical to this area", or that "insufficient attention was paid to providing information specifically useful in the classroom." (However, it also seems that the concern for practical information is a continuing concern of teachers in all in-service situations.) Scheduling was mentioned only twice as a problem.

Of those who found the "Careers in the Classroom" program useful, most ranked the televised programs as the most significant contributor to their learning. The programming received a much higher ranking than the satellite-dependent interaction, for instance. However, it should be noted again that the high ranking of the televised program content might, in part, be accounted for by the technical difficulties experienced during the satellite interaction components. It may also reflect the proportion of class time which had been, in fact, allocated to non-TV program activities during the course of the satellite project.

Figures 2 and 3 show panelists at the interactive sites tended to rank the contribution of the televised programs to learning higher than did panelists at the receive-only sites. The panelists at the receive-only sites, on the other hand, gave higher rankings to the other three components of the satellite project: the interactive, class discussion and materials components. Note that the number of respondents is quite small.

5. Given your expectations on this satellite project, what additional assistance would you have liked to receive during the course of the project? (Open-ended.)

Issue	Number of Times Issue Mentioned
/RESOURCES/	/8/
Teacher guides to programs for students, teachers.	3
Equipment, time.	3
Materials mentioned on programs.	2
/CONTENT/	/7/
More specific ideas in programs, more relevant content.	6
Programs where examples of materials are being used.	1
More satellite interaction.	5
Non-specific responses.	2
On-site instructor.	1
None.	1

Number of Respondents: 24

Programs relevant to the needs of teachers were frequently cited as "additional assistance" desired by respondents in the course of the satellite project. There was also some feeling that a better materials support system could have been provided: that is, teacher guides to programs for children, access to materials mentioned on the programs and so on. For instance, one respondent wrote, "'Time Out' was accompanied by good supplementary material--e.g., Teacher's Guide. Concerning the 'Careers in the Classroom' component, I would have liked to have had information on activities and names mentioned in the programs; not enough time to take notes on all those mentioned."

One respondent, addressing the issue of resource assistance, mentioned the problems of cost: "Financially, the tapes were quite expensive for a small district to find revenue to support the program. Also, we were not aware at the beginning of the large copyright expense yearly to keep the films. The cost is completely out of the question for small school districts."

6. Satellites can be used for education in a number of ways. Which of the following ways do you think would be most valuable to schools in your region? Please rank both sets of alternatives below.*

(a) Please rank the alternatives below so that 1 indicates the most desirable way of offering courses and 3 indicates the least desirable way.

	RANKING		
	1	2	3
Courses based largely on televised programs, followed by audience interaction via satellite.	11	15	17
Special programs with live interaction via satellite to supplement courses not otherwise based on television programs (e.g., an occasional lecture by an important person followed by a question-and-answer period via satellite).	15	17	11
Satellite-based television programs, films or courses to be video-taped by schools for later use in the classroom, with no interaction via satellite.	20	12	11

N = 43

(a) It appears that given the choice between various uses of the satellite, respondents would prefer to video-tape programs which could be used at their own convenience although no interaction capability would be provided. This option would not require that classes would use the satellite at specific times. The respondents' second preference was the use of satellite interaction for occasional lectures and supplementary activities. Least preferred was the most frequent ECSD pattern of satellite utilization--namely, courses based largely on televised programs, followed by audience interaction via satellite.

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[*] The column totals vary because some respondents gave tie-rankings (e.g., more than one first, second or third ranking).

(b) Please rank the alternatives below so that 1 indicates the most desirable way of offering courses and 3 indicates the least desirable way.

	RANKING		
	1	2	3
Offer satellite-based television courses to a small number of classes at a time, with a large amount of student voice interaction.	14	12	17
Offer satellite-based television courses to a large number of classes at a time, with a small amount of student voice interaction via satellite.	7	27	9
Offer satellite-based television courses to be video-taped by a large number of schools and replayed at their convenience, with no interaction via satellite.	20	7	16

The use of the satellite to offer courses to a large number of classes with a small amount of interaction was ranked second by most respondents. This was clearly the model response for this use of the satellite. The other two alternatives obtained a bi-modal distribution. In other words, respondents appear to be divided over the use of the satellite for programs which reach a large audience with no interaction, and over the satellite's use for small audiences with large amounts of interaction.

7. If educational television broadcasts by satellite were to become more common, what would you hope would happen as a result? (Open-ended.)

Issue	Number of Times Issue Mentioned
Same target audience: wider variety of courses, etc.	18
Non-specific responses.	15
More people reached: same subject (target audience broadened).	6
Materials distribution fundtion: provide tape libraries.	5
Pedagogy-general.	2
Responsibilities for the teacher lightened, changed.	1

Number of Respondents: 41

Most of the respondents indicated that the potential of the satellite lay in providing supplementary materials for schools. For instance, one respondent wrote, "I would hope that children of our area would be exposed to cultural events, otherwise impossible for them to attend." Another wrote, "More programs would be presented to help in other subjects besides career education--for example, English, Physical Education, Music, etc." Others referred to the possibility of allowing a wide audience to benefit from programming: "(The satellite project) would not be limited to a few or selected students," and "Students in small rural areas may become more aware." A number of respondents mentioned the potential for use of the satellite as a materials distribution service which enables teachers to tape programs and use them at their own convenience.

8. If educational television broadcasts by satellite were to become more common, what would you be afraid might happen as a result? (Open-ended.)

Issue	Number of Times Issue Mentioned
/DEPENDENCE/	/26/
Too much teacher dependence on TV/misuse of TV by teacher.	11
Classroom interaction suffers from too much dependence on TV/depersonalization.	8
Loss of student interest in normal classroom, TV programs due to too much dependence on TV.	5
Too much student dependence on TV.	2
No fears.	5
Content information not relevant: quality of program may not be good.	4
Loss of local control of schools and curriculum due to content.	3
Misuse of teachers: replace them, etc.	2
Non-specific responses.	1

Number of Respondents: 40.

A fairly large number of panelists mentioned the potential for abuse of the medium. Some individuals also mentioned the possibility that if satellite programs were to become more common, the programs offered may contain content not relevant to the local district, or may signal the loss of local control over curriculum.

9. Assume that you have access to satellite television and that you can select programs and schedules which fit your needs. Assume also that the cost is being met at the federal or state level.

Could you use television to substitute for anything your school is doing now, or to replace any of the resources your school is now using? (Open-ended.)

/26/ Yes /16/ No

IF YES: Please specify:

Issue	Number of Times Issue Mentioned
Enrichment of existing activities.	17
Replace current audio-visual resources.	8
Aspects of all course areas which involve demonstrations.	5
Replace teachers and textbooks.	4

Number of Respondents: 32

Although more than 50 percent of the respondents indicated that they could use television to substitute for current school activities, many of the responses concerned the use of the satellite for enrichment. The responses indicate that the areas in which respondents feel substitution would be appropriate are those subject areas which involve demonstrations. In some cases the use of the satellite to replace teachers and textbooks was mentioned. Some respondents wrote that satellite television could be used to replace audio-visual aids currently being used by schools. As was mentioned earlier, the majority of the responses, however, described the uses of satellites for enrichment of, rather than as a substitute for, current activities.

One respondent who thought that the television would be particularly useful for course areas which involve demonstrations wrote, "In commercial courses like data-processing and computer operations, (television) could give a detailed report on how to operate these machines without having one. Because of the large numbers of students in a school, many never have the opportunity to see the operation of these types of machines." Most respondents gave very general answers, however. One respondent, writing on the appropriateness of the satellite programs for enrichment, wrote: "I feel that it (satellite television) would be highly adaptable to most classes as enrichment." Another wrote, "I feel we would probably use it (satellite television) more in the sense of an enrichment program."

10. As in Question 9, assume that you have access to satellite broadcasts which fit your local needs, and that the costs are met by state or federal funds.

Could you use television to enrich or augment your present educational programs? (Open-ended.)

/41/ Yes /1/ No

Of the 41 respondents agreeing that they could use television to enrich or augment their current school activities, 15 gave very general responses such as "show more subject-matter information," "using material that can improve the general class," "material distribution and great lecturers."

The 21 who made specific suggestions covered a wide range of topics. Most frequently mentioned supplements to existing activities: for example, social studies, science and language arts. Three cited a desire for new courses in technical areas (for example, home economics). Several others mentioned special education, and specialized courses--areas which normally get low enrollments in schools. Several other respondents noted the isolation of the region and the need for students to be exposed to career education and broader cultural experiences. It was expected that a large number of panelists would indicate that they thought television could be used to enrich or augment current school programs.

11. If your school's budget were to increase substantially next year, how would you rank the following ways of using the additional funds?

(Please put a "1" to indicate your highest priority, and "5" for your lowest priority.)*

	RANKING				
	1	2	3	4	5
Improvements or expansion of school buildings.	16	9	5	3	9
Televised programs to serve the purpose(s) you listed in Question 10.	7	9	11	7	8
Hiring new staff.	9	10	5	7	11
Non-television educational materials or activities (e.g., more library books, laboratory equipment, field trips).	4	11	8	13	6
Psychological services, special education programs, etc.	11	7	9	8	9

N = 42

The table indicates that there are no overwhelming preferences for any of the alternative uses of local district funds listed in this question although physical improvements and staff-related choices received the most (1) and (2) rankings. Those respondents who took advantage of the opportunity to express additional priority targets for funds showed no particular set of interests either. Three stated that all of the possible uses of funds listed in the question should have highest priority. One individual put salaries as the first priority. Another stated that her priorities for the classroom were material resourdes (essentially response alternative number 4).

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*The row and column totals may vary due to omissions by respondents, or due to tie-rankings.

SECTION III

ANALYSIS OF COST DATA OF FRMS AND ARC

Part I - Introduction

This paper examines the cost data provided by the Federation of Rocky Mountain States and the Appalachian Regional Commission. The FRMS data covers a thirty-one month period from July, 1972 to January, 1975. The cost data from the ARC is for the period July, 1974 through February, 1975. As more data is collected they will be incorporated into the analysis.

The following sections of this paper describe the expenditures made by FRMS and ARC and lay the groundwork for expanding the analysis. The second part of the paper focuses on the FRMS/STD data while Part III contains the analysis of the ARC data.

Part II - FRMS/STD Costs

There are five sections to this portion of the paper plus an appendix. The second section describes the FRMS/STD data *per se* while the third describes how it was organized for this analysis of costs by functional cost area--an attempt to gain insight into how the various activities necessary for the overall operation of the system effect costs. The fifth section tries to put the FRMS portion of the analysis into perspective.

The FRMS cost data was readily adaptable to the needs of this analysis; the format of the FRMS accounting system allowed for the grouping of expenditures under five categories: Technical, Production, Management, Utilization, and Research and Evaluation. Table II.1.1, Summary of Expenditures, FRMS/STD, contains some of the results of the analysis. Excluding expenditures by FRMS

TABLE II.1.1

SUMMARY OF EXPENDITURES FRMS/STD

Cost Category	7/72-6/73 Cost in $	% Total FY73	7/73-6/74 Cost in $	% Total FY74	7/74-12/74 Cost in $	% Total FY75	7/73-12/74 Cost in $	% Total 7/73-12/74	7/72-12/74 Cost in $	% Total 7/72-12/74
Technical	321,390	15.10	1,173,619	30.46	742,185	35.89	1,915,804	32	2,237,194	28
Production	651,757	30.45	1,395,204	36.21	574,381	27.78	1,969,585	33	2,621,342	33
Management	644,782	30.28	644,205	16.72	289,376	13.99	933,581	16	1,578,363	20
Utilization	514,846	24.18	429,814	11.16	303,293	14.67	733,107	12	1,247,953	15
Research & Evaluation	---	---	210,054	5.45	158,712	7.67	368,766	6	368,766	5
TOTALS:	2,129,051	100.03	3,852,906	100.00	2,067,947	100.00	5,920,843	99	8,053,618	101

previous to federal fiscal year 1973, the production of programming accounted for over thirty percent of total expenditures in each time period. The Broadcast and Engineering or Technical portion of total costs was relatively low in fiscal year 1973 (FY73) but was over thirty percent for FY74 and the seven months of FY75. The gain in the share of Technical costs can be attributed to the increased expenditures for capital in that department (see Tables II.2.2-II.1.4).

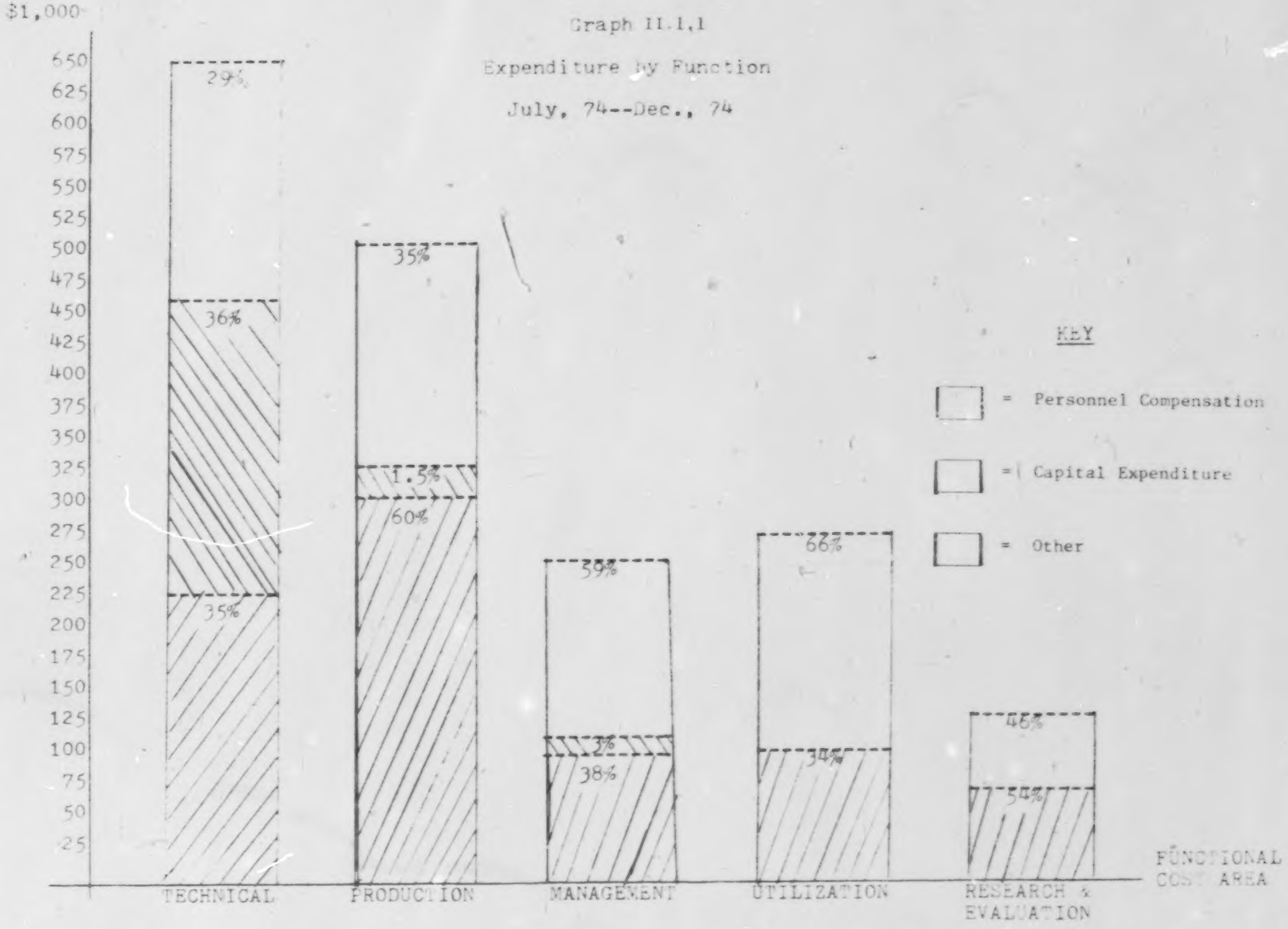
There was a large drop in the relative share of costs attributed to Management between FY73 and FY74. Also, the cost share of Utilization dropped. The creation of the new department, Research, by FRMS helps explain the drops. The research and evaluative function had been performed by persons in different departments, especially by the Utilization staff. Since cost shares are interdependent and Technical costs increased so much, other shares would naturally fall. In this light, Utilization expenditures are basically stable.

Besides breaking down costs by the five departments, FRMS classified expenditures by ten categories. Graph II.1.1 illustrates the importance of the expenditure category Personnel Compensation, as salaries and benefits significantly contributed to costs for all five functions in fiscal year 1975. The most relatively capital intensive function was Technical, and Capital Expenditure was also important to the Production cost area. The "Other" expenditure categories are Transportation, Meetings, Rent and Utilities, Print and Duplication, Communications, Sub-contract, General and Administrative, and Indirect Costs. A more detailed breakdown of costs by expenditure category and for fiscal years 1973 and 1974 is found in Tables II.1.2, II.1.3, and II.1.4. Generally, Personnel Compensation was the category with the largest share of total expenditures, and, except for FY73, Capital Expenditure was

Graph II.1.1

Expenditure by Function

July, 74--Dec., 74



T II

COST DATA SUMMARY FRMS/STD

Fiscal Year 1975[a]

Expenditure Category[b]	Cost Centers (Figures in dollars)					Total Cost in $	Percent Total FY75
	Technical	Production	Management	Utilization	Research & Evaluation		
Personnel Compensation	265,819	350,704	107,961	112,631	85,239	922,354	44.60
Transportation	52,919	5,314	17,142	16,986	8,290	100,651	4.87
Meetings	6,151	60	3,035	7,382	---	16,628	.80
Rent & Utilities	19,724	30,260	9,313	9,720	7,353	76,370	3.69
Print & Duplication	237	17,541	16,790	---	6,245	40,813	1.97
Communication	13,441	209	9,183	5,708	1,630	30,171	1.46
Sub-contracts	27,375	35,495	---	112,190	13,794	188,854	9.13
General & Administrative	23,977	12,518	51,872	2,400	8,648	99,415	4.81
Capital Expenditures	237,560	25,694	8,423	---	---	271,677	13.14
Indirect Costs	94,982	96,586	65,657	36,276	27,513	321,014	15.52
TOTALS:	742,185	574,381	289,376	303,293	158,712	2,067,949	99.99
Percent Total FY75:	35.89	27.78	13.99	14.67	7.67	100.	

---

[a] Fiscal Year 1975 is for a seven month period, July/74-January/75.

[b] Expenditure categories and cost centers are explained in the accompanying text.

TABLE III.1.3

COST DATA SUMMARY FRMS/STD

Fiscal Year 1974

Expenditure Category[a]	Cost Centers (Figures in dollars) Technical	Production	Management	Utilization	Research & Evaluation	Total Cost in $	Percent Total FY74
Personnel Compensation	326,141	482,030	181,311	198,440	139,956	1,327,878	34.46
Transportation	67,910	15,198	40,468	24,875	6,265	154,716	4.02
Meetings	455	34	1,453	393	352	2,687	0.07
Rent & Utilities	35,672	57,793	21,738	23,792	16,778	155,773	4.04
Print & Duplication	---	3,762	23,722	101	1,861	29,446	0.76
Communications	5,841	822	7,873	6,031	424	20,991	0.54
Sub-contracts	26,485	385,488	170,874	116,035	---	698,882	18.14
General & Administrative	29,974	46,578	71,359	2,150	5,513	155,574	4.04
Capital Expenditures	571,589	259,447	21,363	---	313	852,712	22.13
Indirect Costs	109,552	144,052	104,044	57,997	38,592	454,237	11.79
TOTALS:	1,173,619	1,395,204	644,205	429,814	210,054	3,852,906	99.99
Percent Total FY 74:	30.46	36.21	16.72	11.16	5.45	100	

---

[a] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

TABLE II.1.4

COST DATA SUMMARY FRMS/STD

Fiscal Year 1973

Expenditure Category[a]	Cost Centers (Figures in dollars) Technical[b]	Production	Management	Utilization	Total Cost in $	Total FY73
Personnel Compensation	149,079	331,958	187,316	264,229	931,958	43.77
Transportation	36,992	52,962	67,350	39,967	197,272	9.27
Meetings	386	3,159	1,175	---	3,159	0.15
Rent & Utilities	19,817	44,118	24,895	35,113	123,856	5.82
Print & Duplication	48	159	30,447	34	30,689	1.44
Communications	411	187	36,279	112	36,989	0.17
Sub-contracts	---	118,667	---[c]	93,932	212,599	9.99
General & Administrative	15,745	2,928	75,445	2,928	97,045	4.56
Capital Expenditures	48,247	670	91,905	---	140,742	6.61
Indirect Costs	50,665	96,949	129,968	77,160	354,742	16.66
TOTALS:	321,390	651,757	644,782	514,846	2,129,051	98.44
Percent Total FY73	15.10	30.45	30.28	24.18		

---

[a] Expenditure categories and cost centers are explained in the accompanying text.

[b] Only for November'72-June/73.

[c] Figure of $1,263,746, a grant for Early Childhood Education is excluded because it distorts the remaining figures.

second.

The cost and expenditure categories are discussed in more detail in the following two sections. A more complete description of the results of the analysis is in Section 4.

Part II.2. - The FRMS/STD Data

Basically, the cost centers reflect functional cost-incurring areas; that is, they correspond to productive activities engaged in by the FRMS/STD. Also, they were delineated in order to monitor certain components of total cost. For this reason, the categories Programming and Program Talent were kept separately by FRMS; for our purposes, both can be included in the category Production. To facilitate the cost analysis, several of the FRMS/STD designated cost centers were consolidated into aggregated cost centers. These consolidations are described in the next section.

The ten expenditure categories used by FRMS were considered appropriated for this cost analysis and were maintained intact.

Several things should be kept in mind when evaluating the data used in this cost analysis and when reading the analysis itself. First, there is an element of arbitrariness in assigning expenditures to a functional area. The areas are based upon definitions which are often open to interpretation, and the inclusion of an expenditure in one center as opposed to another may not entail a clear-cut decision. Assignments made at different times are especially apt to be inconsistent. This is something which simply cannot be helped. Second, the specification of a new cost center may change the allocation of costs to all categories. For example, the delineation of the cost center Research and Evaluation in July, 1974 means expenditures that were previously included under

TABLE II.2.1

COST CENTERS

Fiscal Year 1973	Fiscal Year 1974	Fiscal Year 1975
Broadcast and Engineering	Broadcast and Engineering	Broadcast and Engineering
	Receive Only Terminal Retrofit	Receive Only Terminal Retrofit
	Denver Uplink Personnel	
	Equipment and Facilities	Equipment and Facilities
Production	Programming	Programming
	Program Talent	Program Talent
Career		
Administration	Administration	Administration
		Public Information
	Research	Research
	Data Processing	
Utilization	Utilization	Utilization

EXPENDITURE CATEGORIES: Personnel Compensation, Transportation, Meetings, Rent and Utilities, Printing and Duplication, Communications, Sub-contracts, General and Administrative, Capital Expenditures, and Indirect Costs.

Management or Utilization but served research or evaluative functions would now be included in the Research and Evaluation cost center. Special care must be taken when making comparisons between FY73 and subsequent years. (Table II.2.1 summarizes the cost centers used year by year.)

Part II.3 - Organization of the FRMS/STD Data

The analysis of the FRMS/STD cost data proceeds by tabulating expenditures by functional cost areas. Five areas are defined: Technical, Production, Management, Utilization, and Research and Evaluation. Basically, these five areas are consolidations of some of the cost centers delineated by FRMS. The Management, Research and Evaluation, and Utilization categories are self explanatory. Technical refers to the costs incurred by broadcasting and receiving signals via satellite. Production encompasses the costs of developing and renting programming for the ESCD. The consolidation of the ten FRMS/STD cost centers into the five functional cost areas used in the analysis is schematically depicted on the following two pages.* The single most difficult task of the consolidation was the splitting of the costs listed under "Equipment and Facilities" into components of the Technical and Production categories.

Assigning particular expenditures from the FRMS Equipment and Facilities cost center to the Technical or Production functional cost area required judging whether an expenditure best fit into one functional category or another.

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*Because of the nature of the FY73 data, no elaborate modifications were necessary with respect to cost categories. Only the category "Career" was added into Production for the analysis. Also note that there was no separate Research and Evaluation cost area in FY73.

TABLE II.3.1

CONSOLIDATING COST CENTERS: FY75

FRMS/STD Cost Centers	Functional Cost Area
BROADCAST AND ENGINEERING	TECHNICAL
RECEIVE ONLY TERMINAL RETROFIT	TECHNICAL
EQUIPMENT AND FACILITIES	TECHNICAL PRODUCTION
PROGRAMMING	PRODUCTION
PROGRAM TALENT	PRODUCTION
ADMINISTRATION	MANAGEMENT
PUBLIC INFORMATION	MANAGEMENT
UTILIZATION	UTILIZATION
RESEARCH	RESEARCH & EVALUATION

TABLE II.3.2

CONSOLIDATING COST CENTERS: FY74

FRMS/STD Cost Centers	Functional Cost Area
BROADCAST AND ENGINEERING	TECHNICAL
DENVER UPLINK TERMINAL PERSONNEL	
RECEIVE ONLY TERMINAL RETROFIT	
EQUIPMENT AND FACILITIES	PRODUCTION
PROGRAMMING	
PROGRAM TALENT	
ADMINISTRATION	MANAGEMENT
UTILIZATION	UTILIZATION
RESEARCH	RESEARCH & EVALUATION
DATA PROCESSING	

Information provided in conversations with personnel at FRMS aided the reallocation procedure. Still, the allocations are somewhat inexact. For example, expenditures under Equipment and Facilities were made for video tape machines, but the machines were employed for use in both Technical and Production capacities. In reassigning costs, some error crept in, but its magnitude is not great enough to distort the results.

In another instance, costs had to be reallocated. Rent and Utilities expenditures were charged to only two categories, Technical and Management. This resulted in a distortion of relative cost shares between cost centers. The Rent and Utilities charged to Management had to be reallocated among Utilization, Research and Evaluation, Production, and Management. Personnel Compensation expenditures were subjectively selected as a weight. Other figures which might have been used as a basis were either not available or were no more justifiable.

The following subsections detail the procedures used in reallocating Equipment and Facilities and Rent and Utilities. The working tables in the appendix summarize the consolidations.

Part II.3A - Equipment and Facilities Reallocation

As noted earlier, the reassigning of expenditures of either Broadcast and Engineering or Program was accomplished by determining the function served by the goods or services which were purchased. Most of the expenditure categories were related to "Broadcast and Engineering" (the Technical function). The results are in Tables II.3A.1 and II.3A.2.

Under the expenditure category sub-contracts, a split between Technical and Production was required. The FRMS sub-category Studio/Access Redundancy Sys refers to video tape machines used by PBS for the delay broadcast of programs.

TABLE II.3A.1

Cost Reallocation FY75[a]

Equipment and Facilities

Expenditure Category	Equipment &[b] Facilities Cost in $	Broadcast & Engineering Cost in $	Programming Cost in $
Personnel Compensation	31,374	31,374	---
Transportation	1,913	1,913	---
Meetings	2,936	2,936	---
Rent and Utilities	2,339	2,339	---
Printing and Duplication	---	---	---
Communications	2,340	2,340	---
Sub-contracts	42,000	19,500	22,500
Studio/Access Redundancy Sys	19,500	19,500	---
Studio Equipment Lease	22,500	---	22,500
General and Administrative	4,479	4,479	---
Capital Expenditures	111,193	96,563	14,630
Furnishings and Studio	14,630	---	14,630
Denver Uplink Personnel and Leasehold	96,563	96,563	---
Indirect Cost	10,760	10,760	---

---

[a] Period covers first seven months of FY75, July/74-January/75.

[b] Equipment and Facilities = Broadcast and Engineering + Programming.

TABLE II.3A.2

Cost Reallocation FY74[a]
Equipment and Facilities

Expenditure Category	Equipment &[b] Facilities Cost in $	Broadcast & Engineering Cost in $	Programming Cost in $
Personnel Compensation	13,690	13,690	---
Transportation	860	860	---
Meetings	7	7	---
Rent & Utilities	2,814	2,814	---
Printing and Duplication	---	---	---
Communications	1,021	1,021	---
Sub-contracts	353,071	18,985	334,086
Studio/Access Redundancy Sys	334,086	---	334,086
Studio Equipment Lease	18,985	18,985	---
General and Administrative	9,960	9,389	570
Capital Expenditures	489,480	256,878	232,602
Studio	232,602	---	232,602
Denver Uplink Personnel and Leasehold	256,878	256,878	---
Indirect Cost	7,088	---	7,088

---

[a] Fiscal Year 1974 covers July 1973-June 1974.

[b] Equipment and Facilities = Broadcast and Engineering + Programming.

Figures are subject to rounding errors.

Studio Equipment Lease refers to machines used in the creation of programming. Actually, all the tape machines tend to be used on a "what's available" basis, but the formal breakdown was maintained.

The General and Administrative expenditure reflects purchases for both cost categories. Additional information was provided by FRMS which resulted in the figures given in the tables.

The breakdown listed under Capital Expenditures is fairly self-explanatory. Costs associated with the Denver Uplink Terminal and the Leasehold relate to broadcasting while expenditures for Furnishings and the Studio relate to programming.

Part II.3B - Allocation of "Rent and Utilities"

The FRMS/STD accounting system charges most Rent and Utility cost to the Management function, a practice which distorts the relative shares of the functional cost areas. (Other possible weights such as floor space by department were either not available or no more justifiable than Personnel Compensation.) So Personnel Compensation was selected as the weight in determining expenditures shares for Management, Production, Utilization, and Research and Evaluation (separate Rent and Utilities expenditures were charged against the Technical Department except for FY73). Let P = total Personnel Compensation for the involved cost categories. Let R = Rent and Utilities, and, for example, let M = Personnel Compensation for the Management function. Then the Rent and Utilities allocated to Management = M/P x R.

Part II.4 - Analysis of the FRMS/STD Cost Data

The basic manner in which the cost analysis will proceed is to compare figures in particular categories over time. These figures are not strictly

TABLE II.3B.1
REALLOCATION OF RENT AND UTILITIES

Fiscal Year 1975*

Cost Center	Personnel Compensation	Percent	Rent and Utilities
Production	350,704	53.41	30,260
Management	107,961	16.44	9,313
Utilization	112,631	17.15	9,720
Research & Evaluation	85,239	12.98	7,353

---

*For a seven month period, July/74-January/75.

Fiscal Year 1974

Cost Center	Personnel Compensation	Percent	Rent & Utilities
Production	482,030	48.12	57,793
Management	181,310	18.10	21,738
Utilization	198,439	19.81	23,792
Research & Evaluation	139,955	13.97	16,778

Fiscal Year 1973

Cost Center	Personnel Compensation	Percent	Rent & Utilities
Production	187,316	20.10	44,118
Management	264,229	28.35	24,895
Utilization	331,958	35.62	35,113
Technical*	149,079	16.00	19,817

---

*"Rent and Utilities" expenditure had to be imputed for Technical in FY73 because no separate expenditures were recorded. Research and Evaluation was not delineated as a FRMS/STD cost center in FY73.

comparable because total expenditures differ in the three years (FY75 encompasses only seven months) which may affect the composition of expenditures, because the accounting structure and the organization itself were dynamic over time, and because assignment of cost to particular expenditure categories and cost centers may be inconsistent between years. However, investigating the cost shares of the different cost centers and expenditure categories will provide insight into the underlying cost function of the ESCD and, then into a more general system of satellite transmitted educational services.

In two of the three years, FY73 and FY74, the largest cost share belonged to Production which also possessed the second largest share in FY75. Technical costs amounted to 35% in FY75, the largest share, and in FY74, Technical had the second largest cost share. The FY73 Technical cost figure was only 15% of total expenditures, coinciding with the relatively small capital expenditures in that year.

The Management function's cost share dropped in relative importance between FY73 and FY74 from 30% to 17% (14% in FY75), though the absolute expenditures for Management between the two years were almost the same. Presumably, the creation of the separate cost center, Research and Evaluation explains a portion of the drop in Management's relative share. Also, the terminated grant for Early Childhood Education was excluded from these figures. Inclusion of this large grant in Management's Sub-contracts expenditure category made the percentage figures for FY73 meaningless in comparisons with other fiscal years. However, any costs complementary to the grant but not absorbed directly by the grant would inflate costs in the affected department.

Utilization's percentage of total costs also dropped between FY73 and FY74--in part, a result of the creation of Research and Evaluation--while the percentage figures for FY74 and FY75 were close. Overall, there was an obvious shift of resources to the Technical function--a fact which explains part of the reductions in the percentage of total expenditures devoted to other functions. (This interdependency among percentage figures suggests caution in interpreting such figures.) Only the Production category retains a consistently large share of the total costs in the face of the increasing share of the Technical cost area.

The increase in the proportion of resources devoted to the Technical cost center is parallelled by an increase in the share of expenditures for capital. Capital Expenditure was only 7% of the total cost in FY73, was more than triple that in FY74 and more than double that in FY75. However, the single dominant expenditure category was Personnel Compensation, representing, at the least, over one-third of the total of a year's costs. Generally, the shares of the different expenditure categories did not vary much over the three years. Discrepancies between FY73 and FY74 are marked than those between FY74 and FY75.

The differences in the distribution of costs among the expenditure categories may be the result of the changing needs or demands on the organization as the demonstration progressed. For example, the sharp increase in capital expenditures between FY73 and FY74 and the decrease between FY74 and FY75 reflect heavy investments in preparation for broadcast with a reduction in expenditure after the initial investment. Similarly, transportation costs were high in the formative stage of the ESCD to prepare for operation while heavier meeting costs were incurred at a later date as the Utilization staff required sessions.

The particular functional cost areas can be examined for additional information. For the Technical area, the most striking aspect is the dramatic increase in Capital Expenditure. The increase was so large that

Capital Expenditure became the dominant expenditure category, surpassing Personnel Compensation. The Technical function became capital intensive relative to the other cost areas. Combined, Personnel Compensation and Capital Expenditure made-up 60% to 75% of the Technical costs.

Of course, for the Production cost area, Personnel Compensation is the largest category. Production's relative importance to total costs varied significantly over the three fiscal years, and the relative importance of the different expenditure categories to Production costs varied over the years. In both cases, the variation can be explained by the size of the Sub-contract component of Production costs.

The Management cost category is distorted by the presence of Research and Evaluation expenditures and the (deleted) Early Childhood Education grant in FY73. Still, variation in the distribution of costs among expenditure category is not great over time. The relatively large $170,874 in sub-contracts in FY74 accounts for some of the variation.

Two categories compose most of the Utilization costs, Personnel Compensation and Sub-contracts. Personnel Compensation's percentage share fell through time, but the Sub-contract payments to state coordinators gained in relative importance so the share of labor was maintained relatively high.

Again, inferences based on percentages are tenuous, and since FY75 is only for a seven month period, the timing of expenditures in different categories will affect the cost shares of the categories. The descriptions of the data may change greatly as more information is collected and analyzed.

Part II.5 - Summarizing the Import of the FRMS Data

The question is, what lessons do the preceding data hold for us with regard to satellite delivered educational services? The immediate answer is, not many. There are a number of difficulties which can be enumerated. First, the FRMS/STD data do not give a complete picture of the ESCD, let alone of a complete educational services system. The data from the Appalachian portion of the experiment helps to fill in some of the gaps. (See Part III.) However, costs of the non-terrestrial portion of the ESCD must also be incorporated into the analysis to form a total cost account of the existing experimental system. Presently, work is underway to provide estimates of satellite costs. The task of performing a comprehensive cost analysis continues as more data become available.

Second, the analysis ignores expenditures in kind made by participating receiving sites. Hopefully, data will be obtained to judge the size of these contributions.

Third, the operation and organization of a more extensive educational satellite system might differ considerably from the STD, and fourth, considering cost figures in isolation is an empty task. They must be compared either with the benefits they yield or with other cost figures. More on these latter two point later.

Some tentative conclusions can be drawn from the present data set. The Rocky Mountain segment of the STD delivered educational materials and services to fifty-six schools plus twelve public television stations at a cost of over seven and one-half million dollars spread over a thirty month period--this does not include satellite costs or costs incurred before July, 1972 or expenditures for the last half of fiscal year 1975. Not all these costs can be attributed solely to the fact of the delivery of educational services--the ESCD is a demonstration and must be viewed as such. A satellite system has been demonstrated to be a technologically feasible means of distributing educational services. Although it possesses advantages as a delivery system under certain conditions, a satellite system has not been proven to be the single most efficient means of providing those services. Such a judgment would premature at this point

WORKING TABLE: TECHNICAL

Fiscal Year 1975[a]

Expenditure Category[b]	Broadcast & Engineering Cost in $	Receive Only Terminal Retrofit Cost in $	Equipment & Facilities Cost in $	Total Technical Cost in $	Denver Uplink Cost in $	Percent Technical	Percent Total FY75
Personnel Compensation	233,758	---	31,374	265,819	687	35.82	12.85
Transportation	48,683	2,323	1,913	52,919	--	7.13	2.56
Meetings	3,215	---	2,936	6,151	--	0.83	0.30
Rent & Utilities	17,385	---	2,339	19,724	--	2.66	0.95
Print & Duplication	237	---	---	237	--	0.03	0.01
Communications	11,101	---	2,340	13,441	--	1.81	0.65
Sub-contracts	7,875	---	19,500	27,375	--	3.69	1.32
General & Administrative	19,498	---	4,479	23,977	--	3.23	1.16
Capital Expenditures	141,006	15	96,536	237,560	--	32.01	11.49
Indirect Costs	83,469	581	10,760	94,982	172	12.80	4.59
TOTALS:	566,227	2,919	172,180	742,185	859	100.01	35.88
Percent Total FY75:	76.29	0.39	23.20	99.88	0.0		

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[a] Fiscal Year 1975 is for a seven month period, July/74-January/75.

[b] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

[c] This figure includes $10,844 for terminal installation travel.

WORKING TABLE: MANAGEMENT

Fiscal Year 1975[a]

Expenditure Category[b]	Administration Cost in $	Public Information Cost in $	Total $ Management	Percent Management	Percent Total FY75
Personnel Compensation	100,604	7,357	107,961	37.31	5.22
Transportation	9,710	7,432	17,142	5.92	0.83
Meetings	650	2,385	3,035	1.05	0.15
Rent & Utilities	(46,313)[c]	---	9,313	3.22	0.45
Print & Duplication	6,781	10,009	16,790	5.80	0.81
Communications	9,000	183	9,183	3.17	0.44
Sub-contracts	---	---	---	---	---
General & Administrative	34,602	17,270	51,872	17.93	2.51
Capital Expenditures	8,423	---	8,423	2.91	0.41
Indirect Costs	54,498	11,159	65,657	22.69	3.71
TOTALS:	(233,581)[e]	55,795	289,376	100.0	14.53
Percent Total FY75	(11.30)[e]	2.70	14.00		

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[a] Fiscal Year 1975 is for a seven month period, July/74-January/75.

[b] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

[c] Original rent figure, not included in total management.

[d] Estimated rental figure imputed only for all management, not for any particular FRMS cost centers.

[e] Calculated including the 46,313 for "Rent and Utilities."

WORKING TABLE: PRODUCTION

Fiscal Year 1975[a]

Expenditure Category[b]	Programming Cost in $	Program Talent Cost in $	Equipment & Facilities Cost in $	Total Production Cost in $	Percent Production	Percent Total FY75
Personnel Compensation	293,450	57,254	---	350,704	61.06	16.96
Transportation	5,039	275	---	5,314	0.93	0.26
Meetings	60	---	---	60	0.01	0.00
Rent & Utilities	30,260	---	---	30,260[c]	5.27	1.46
Print & Duplication	17,541	---	---	17,541	3.05	0.85
Communications	209	---	---	209	0.04	0.01
Sub-contracts	12,995	---	22,500	35,495	6.18	1.72
General & Administrative	12.518	---	---	12,518	2.18	0.61
Capital Expenditures	11,064	---	14,630	25,694	4.47	1.24
Indirect Costs	82,204	14,382	---	96,586	16.82	4.67
TOTALS:	465,340	71,911	37,130	574,381	100.01	27.78
Percent Total FY75:	22.50	3.48	1.80	27.78		

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[a] Fiscal Year 1975 is for a seven month period, July/74-January/75.

[b] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

[c] Estimated rental figure imputed only for all production, not for any particular FRMS cost centers.

WORKING TABLE: UTILIZATION

Fiscal Year 1975[a]

Expenditure Category[b]	Utilization Cost in $	Percent Utilization	Percent Total FY75
Personnel Compensation	112,631	37.14	5.45
Transportation	16,986	5.60	0.82
Meetings	7,382	2.43	0.36
Rent & Utilities	9,720	3,20	0.47
Print & Duplication	---	---	---
Communications	5,708	1.88	0.28
Sub-contracts	112,190	36.99	5.43
General & Administrative	2,400	0.79	0.12
Capital Expenditures	---	---	--
Indirect Costs	36,276	11.96	1.75
TOTALS:	303,293	99.99	14.68

---

[a] Fiscal Year 1975 is for a seven month period, July/74-January/75.

[b] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

WORKING TABLE: RESEARCH AND EVALUATION

Fiscal Year 1975[a]

Expenditure Category[b]	Total[c] Research and Evaluation Cost in $	Percent Research and Evaluation	Percent Total FY75
Personnel Compensation	85,239	53.71	4.12
Transportation	8,290	5.22	0.40
Meetings	---	---	---
Rent & Utilities	7,353	4.63	0.36
Print & Duplication	6,245	3.93	0.30
Communications	1,630	1.03	0.08
Sub-contracts	13,794	8.69	0.67
General & Administrative	8,648	5.45	0.42
Capital Expenditures	---	---	---
Indirect Costs	27,513	17.34	1.33
TOTALS:	158,712	100.	7.68

---

[a] Fiscal Year 1975 is for a seven month period, July/74-January/75.

[b] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

[c] Includes data processing expenditures equal to $564.

WORKING TABLE: TECHNICAL

Fiscal Year 1974

Expenditure Category[a]	Broadcast & Engineering Cost in $	Receive only Terminal Retrofit Cost in $	Equipment & Facilities Cost in $	Denver Uplink Terminal Personnel Cost in $	Total Technical Cost in $	Percent Technical	Percent Total FY 74
Personnel Compensation	302,134	---	13,690	10,317	326,141	27.79	8.46
Transportation	64,294	1,724	860	1,030	67,910	5.79	1.76
Meetings	410	---	7	37	455	0.04	0.01
Rent & Utilities	32,858	---	2,814	---	35,672	3.04	0.93
Print & Duplication	---	---	---	---	---	---	---
Communications	4,812	---	1,021	8	5,841	0.50	0.15
Sub-contracts	7,500	---	18,985	---	26,485	2.26	0.69
General & Administrative	20,576	---	9,389	7	29,974	2.55	0.78
Capital Expenditure	314,698	---	256,878	12	571,589	48.70	14.84
Indirect Costs	106,271	431	---	2,850	109,552	9.33	2.84
TOTALS:	853,357	2,155	303,647	14,263	1,173,619	100	30.46
Percent Total FY74:	22.15	0.06	7.88	0.37	30.46		

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[a] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

WORKING TABLE: PRODUCTION

Fiscal Year 1974

Expenditure Category[a]	Programming Cost in $	Program Talent Cost in $	Equipment & Facilities Cost in $	Total Production Cost in $	Percent Production	Percent Total FY74
Personnel Compensation	463,370	18,659	---	482,030	34.55	12.51
Transportation	15,198	---	---	15,198	1.09	0.39
Meetings	34	---	---	34	0.00	0.00
Rent & Utilities	---	---	---	57,793[b]	4.14	1.50
Print & Duplication	3,762	---	---	3,762	0.27	0.10
Communications	822	---	---	822	0.06	0.02
Sub-contracts	51,402	---	334,086	385,488	27.63	10.01
General & Administrative	46,007	---	570	46,578	3.34	1.21
Capital Expenditures	26,845	---	232,602	259,447	18.60	6.73
Indirect Costs	132,299	4,665	7,088	144,052	10.32	3.74
TOTALS:	739,742	23,324	574,347	1,395,204	100	36.21
Percent Total FY74:	19.20	0.61	14.91	36.21		

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[a] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

[b] Estimated rental figure imputed only for all production, not for any particular FRMS cost centers.

WORKING TABLE: MANAGEMENT

Fiscal Year 1974

Expenditure Category[a]	Management (Administration) Cost in $	Percent Management	Percent Total FY74
Personnel Compensation	181,311	28.14	4.71
Transportation	40,468	6.28	1.05
Meetings	1,453	0.23	0.04
Rent & Utilities	21,738[b]	3.37	0.56
Print & Duplication	23,722	3.68	0.62
Communications	7,873	1.22	0.20
Sub-contracts	170,874	26.52	4.43
General & Administrative	71,359	11.08	1.85
Capital Expenditures	21,363	3.32	0.55
Indirect Costs	104,044	16.15	2.70
TOTALS:	644,205	99.99	16.72

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[a] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

[b] Estimated rental figure imputed only for all Management, not for any particular FRMS cost centers.

WORKING TABLE: UTILIZATION

Fiscal Year 1974

Expenditure Category[a]	Utilization Cost in $	Percent Utilization	Percent Total FY74
Personnel Compensation	198,440	46.17	5.15
Transportation	24,875	5.79	0.65
Meetings	393	0.09	0.01
Rent & Utilities	23,792[b]	5.54	0.62
Print & Duplication	101	0.02	0.00
Communications	6,031	1.40	0.16
Sub-contracts	116,035	27.00	3.01
General & Administrative	2,150	0.50	0.06
Capital Expenditures	---	---	---
Indirect Costs	57,997	13.49	1.51
TOTALS:	429,814	100	11.16

---

[a] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

[b] Estimated rental figure imputed only for all Utilization, not for any particular FRMS cost centers.

WORKING TABLE: RESEARCH AND EVALUATION

Fiscal Year 1974

Expenditure Category[a]	Research Cost in $	Data Processing Cost in $	Total Research and Evaluation Cost in $	Percent Research and Evaluation	Percent Total FY74
Personnel Compensation	99,052	40,904	139,956	66.63	3.63
Transportation	5,325	940	6,265	2.98	0.16
Meetings	352	---	352	0.17	0.01
Rent & Utilities	---	---	16,788[b]	7.99	0.44
Print & Duplication	1,811	50	1,861	0.89	0.05
Communications	424	---	424	0.20	0.01
Sub-contracts	---	---	---	---	---
General & Administrative	234	5,279	5,513	2.62	0.14
Capital Expenditures	66	247	313	0.15	0.01
Indirect Costs	26,799	11,793	38,592	18.37	0.10
TOTALS:	134,063	59,213	210,054	100	5.45
Percent Total FY74	3.48	1.54	5.45		

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[a] Expenditure categories are explained in the accompanying text. All figures are subject to rounding errors.

[b] Estimated rental figure imputed only for all Research and Evaluation, not for any particular FRMS cost center.

WORKING TABLE: PRODUCTION AND TECHNICAL

Fiscal Year 1973

Expenditure Category[a]	Production Cost in $	Percent Production	Percent Total FY73	Technical Cost in $	Percent Technical	Percent Total FY73
Personnel Compensation	331,958	51.21	15.59	149,079	46.39	7.00
Transportation	52,962	8.17	2.49	36,992	11.51	1.74
Meetings	3,159	0.49	0.15	386	0.12	0.02
Rent & Utilities	44,118	6.81	2.07	19,817	6.17	0.93
Print & Duplication	159	0.02	0.01	48	0.01	0.00
Communications	187	0.03	0.01	411	0.13	0.02
Sub-contracts	118,667	18.31	5.57	---	---	---
General & Administrative	2,928	0.45	0.14	15,745	4.90	0.74
Capital Expenditures	670	0.10	0.03	48,247	15.01	2.27
Indirect Costs	96,949	14.96	4.55	50,665	15.76	2.38
TOTALS:	651,757	100	30.45	321,390	100	15.10

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[a] Expenditure categories and cost centers are explained in the accompanying text.

WORKING TABLE: MANAGEMENT AND UTILIZATION

Fiscal Year 1973

Expenditure Category[a]	Management Cost in $	Percent Management	Percent Total FY73	Utilization Cost in $	Percent Utilization	Percent Total FY73
Personnel Compensation	187,316	29.05	8.80	264,229	51.32	12.41
Transportation	67,350	10.45	3,16	39,967	7.76	1.88
Meetings	1,175	0.18	0.06	---	---	---
Rent & Utilities	24,895	3.86	1,17	35,113	6.82	1.65
Print & Duplication	30,447	4.72	1.43	34	0.01	0.00
Communications	36,279	5.63	1.70	112	0.02	0.01
Sub-contracts	---[b]	---	---	93,932	18.24	4.41
General & Administrative	75,445	11.70	3.54	2,928	0.57	0.14
Capital Expenditures	91,905	14.25	4.32	---	---	---
Indirect Costs	129,968	20.16	6.10	77,160	14.99	3.62
TOTALS:	644,782	100	30.28	514,846	99.73	24.18

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[a] Expenditure categories and cost centers are explained in the accompanying text.

[b] A figure of $1,265,746, a grant for Early Childhood Education is excluded because it distorts the remaining figures.

Part III - AESP Cost Data Analysis

Part III.1 - Introduction

The Appalachian Education Satellite Project (AESP) has supplied cost data for this portion of the analysis. This section of the paper is analogous to Part II of the FRMS data. However, the format of the data requires slight changes in the organization of the analysis so Parts II and III are not identical.

In this case data is presented in three sets: the overall allocations and costs for the period July 1, 1974--September 1, 1975 for the AESP (the ARC budget; a more detailed analysis of costs incurred by the Resource Coordinating Center (RCC), and examples of the AESP budgets for the regional educational service agenices (RESAs). The data was made available from the ARC and the RCC. As more data becomes available, it will be incorporated into the analysis. The data will be analyzed first in the manner it arrived (RCC designated cost and expenditure categories held intact) and then in a re-organized form with cost and expenditures areas matched as closely as possible with the FRMS categories. The analysis will have two other facets--one set of data is the budget allocations for 7/1/74--9/1/75 while the other is the actual expenditures for 7/1/74--2/28/75. Both sets will be analyzed separately.

Part III.2 - Budget Data

Table III.2.1 contains the budget allocations for the AESP and the actual costs incurred through 2/28/75. The significant figure is the projected dollar cost of services which accounts for 91% of the budget. The lion's share of the services allocation goes to the RCC. Of the remaining expenses, Personnel Compensation is dominant.

TABLE III.2.1*

Appalachian Regional Commission
ATS-F Satellite Educational Technology Demonstration
July 1, 1974 - September 1, 1975

	Allocations	Cumulative Costs to Date	Estimated Balance 2/28/75
Personnel Compensation	$ 66,639	$ 36,933	$ 29,706
Personnel Benefits	8,710	3,394	5,316
Travel	12,000	5,199	6,801
Rent & Communications	8,000	2,178	5,882
Services	1,003,515	527,058	476,457
Supplies/Publications	1,500	29	1,471
Equipment	800		800
	$1,101,164	$574,791	$526,373

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*Provided by ARC, 3/17/75.

TABLE III.2.2

RCC Budget 7/1/74-8/31/75

	Information Systems Cost in $	% Info Syst	Evaluation Cost in $	% Eval	Television Cost in $	% TV	Career Education Cost in $	% Car. Educ	Reading Cost in $	% Read	Management Cost in $	% Mngt	Total Cost in $	% Total
Salaries and Benefits	26,674	37	54,613	59	81,898	42	29,152	29	33,340	41	107,827	63	333,504	47
Office Supplies	500	1	1,000	1	60,000	31	300	0	500	1	1,500	1	63,800	9
Travel	1,500	2	2,000	2	14,320	7	3,500	3	3,500	4	4,500	3	29,320	4
Communication	1,000	1	1,000	1	900	0	500	0	500	1	1,500	1	5,400	1
Printing	2,500	3	6,000	6	---	--	2,750	3	3,500	4	5,000	3	19,750	3
Searches	26,000	36	---	--	---	--	---	--	---	--	---	--	26,000	4
Consultants	---	--	---	--	---	--	16,000	16	9,600	12	---	--	25,600	4
Studio Expenses	---	--	---	--	---	--	---	--	---	--	---	--	---	--
Instructional Supplies	---	--	---	--	---	--	10,000	10	14,500	18	---	--	24,500	3
Sub-contracts	---	--	---	--	---	--	24,234	24	---	--	---	--	24,234	3
Computer Time	500	1	1,800	2	---	--	---	--	---	--	---	--	2,300	0
Indirect Costs	12,757	18	26,120	28	39,168	20	13,942	14	15,945	20	51,569	30	159,501	22
TOTAL	71,431	100	92,533	100	196,286	100	100,378	100	81,385	100	171,896	100	713,909	100
% Total	10		13		27		14		11		24			

The 7/1/74--8/11/75 RCC budget is contained in Table III.2.2 Allocations are cross referenced by expenditure category and cost area. Indirect costs are paid to the University of Kentucky for rent, library use, etc., and are set at 55% of salaries (salaries per se are smaller than the Salaries and Benefits figures in the tables). The RCC accounting system groups the expenditures under six cost categories: Information Systems, Evaluation, Television, Career Education, Reading, and Management. (Excluded from this detailed breakdown was the Four-Channel Component, concerned with developing pedagogical methods and budgeted at $2,201.) The categories, Information Systems, Career Education, and Reading, relate to the development of instructional materials. Television encompasses costs incurred in the production and broadcast of the instructional materials--a combination of the Production and Technical functions described in the FEMS paper. The Management and Evaluation Categories are self-explanatory.

The single dominant cost category is Television, 27% of the budget. Second is Management, 24%, while the three clearly Production categories, Information Systems, Career Education, and Reading, account for 35% with individual shares 10%, 14%, and 11%, respectively. Thirteen percent of the budget was set aside for evaluative purposes. Salaries and Benefits required a consistently large percentage share of the allocations of each cost component and 47% overall. Of the total budget, the only other large expenditure was for Indirect Costs, overhead 22%. Occasionally, a certain expenditure category will loom large in one cost area's budget; for example, Searches, the finding of requested materials, was deemed a potentially large component (36%) of the costs of the Information Systems area.

Part III.3 - Cost Data

Of course, the figures in Table III.2.2 were budget allocations, the actual expenditures for the first eight months of the fourteen month budget period are displayed in Table III.3. In terms of actual expenditures, Television was the dominant category with a 27% share of the total, followed by Management with 23%. Combined, Career Education (18%), Reading (12%), and Information Systems (6%) account for 36% of costs with the residual 12% belonging to Evaluation. The actual cost shares closely approximate the budget allocations. The same is true for the expenditure categories.

The cost data contained in Table III.3.1 can be re-organized to correspond more closely to the category-structure used by FRMS. The cost categories Information Systems, Television, and Reading are grouped under a Production heading while Management, Evaluation, and Television are left in tact.* Some of the expenditure categories can be left as they are: Travel, Communication, Printing and Duplication, Sub-contract, and Indirect Costs. Consultant is added to Salaries and Benefits to form a Personnel Compensation category--although inquiries will be made to find out if some of the Consultant costs should be assigned to Travel. The other expenditure categories are collected under a General and Administrative heading.

The resulting table corresponds to the FRMS tables only approximately since the tables evolve from different accounting systems. The dominance of Personnel

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*The Television category will need to be broken down into Production and Broadcast and Engineering components. That task requires more detailed data.

TABLE III-3.1

RCC Expenditures 7/1/74-2/28/75

	Information Systems Cost in $	% Info Syst	Evaluation Cost in $	% Eval	Television Cost in $	% TV	Career Education Cost in $	% Car. Educ	Reading Cost in $	% Read	Management Cost in $	% Mngt	Total Cost in $	% Total
Salaries and Benefits	17,633.88	55	36,673.33	60	73,893.71	52	26,020.00	29	24,044.42	40	69,697.22	60	247,992.56	49
Office Supplies	2,463.55	8	1,874.36	3	16,820.94	12	6,315.86	7	2,380.53	4	892.25	1	30,747.49	6
Travel	1,075.84	3	561.65	1	8,794.53	6	1,643.60	2	3,169.14	5	3,925.79	3	19,172.55	4
Communication	37.85	0	317.66	1	132.16	0	798.71	1	---	0	2,898.41	3	4,184.79	1
Printing and Duplication	298.55	1	1,489.75	2	---	--	6,959.84	8	2,021.22	3	1,390.89	1	12,160.75	2
Searches	---	--	---	--	---	--	---	--	---	--	---	--	---	--
Consultants	---	--	85.00	0	1,906.27	1	9,429.49	10	2,323.40	4	---	--	13,744.16	3
Studio Expense	---	--	---	--	1,584.00	1	---	--	---	--	---	--	1,584.00	0
Instructional Supplies	---	--	---	--	---	--	6,305.57	7	13,902.65	23	---	--	20,208.22	4
Sub-contract	---	--	---	--	---	--	18,850.00	21	---	--	---	--	18,850.00	4
Computer Time	1,446.65	4	1,249.98	2	---	--	---	--	---	--	---	--	2,696.63	1
Indirect Costs	9,256.65	29	19,241.01	31	38,727.75	27	13,670.11	15	12,317.16	20	36,463.63	32	129,681.31	26
TOTAL	32,242.97	100	61,492.74	100	141,859.36	100	89,993.18	100	60,158.52	100	115,275.19	100	501,021.96	100
% Total	6		12		28		18		12		23		100	

TABLE III.3.2

RCC EXPENDITURES 7/1/74-2/28/75
REVISED FORMAT

	Production	% Prod.	Television	% TV	Management	% Mngt.	Evaluation	% Eval.	Total	% Total
Personnel Compensation	79,481.19	44	75,799.98	53	69,697.22	60	36,758.33	60	261,736.77	52
Travel	5,890.58	3	8,794.53	6	3,925.79	3	561.65	1	19,175.55	4
Communication	836.58	0	132.16	0	2,898.41	3	317.66	1	4,184.79	1
Print & Duplication	9,279.61	5	--	-	1,390.89	1	1,489.75	2	12,160.75	2
Sub-Contract	18,850.00	10	---	-	---	-	---	-	18,850.00	4
General and Administrative	32,814.81	18	18,404.94	13	892.25	1	3,124.34	5	55,263.34	11
Indirect Costs	35,243.92	19	38,727.15	27	36,468.63	32	19,241.01	31	129,681.31	26
Total	182,396.67	100	141,859.36	100	115,273.19	100	61,492.74	100	501,021.96	100
% Total	36		28		23		12		100	

Compensation is striking in any case. Further information will be gathered from FRMS and ARC so comparisons and combinations of data can be fruitfully made.

Part III.4 - RESA Budget Data

This section includes examples of RESA budgets. There are fifteen regional service agencies in the RESA participating as receiving sites with five sites designated as lead RESAs. Table III.4.1 and Table III.4.2 are examples of RESA budgets supplied by ARC. They show that, far and away, Salaries and Benefits form the bulk of RESA expenditures. The Personnel Compensation for the AESP is obviously the dominant component of total cost.

TABLE III.4.1

NEW YORK RESA
AESP BUDGET
July 1, 1974 - August 31, 1975

Personnel Salaries:	Salaries	Benefits
Project Director	$ 15,900.00	$ 4,770.00
Research Assistants		
Intermediate Unit (part-time)	6,000.00	1,800.00
Cattaraugus BOCES (part-time)	6,000.00	1,800.00
Secretary	6,500.00	1,950.00
TOTAL SALARIES	$ 34,400.00	$ 10,320.00
Contracted Services:	$ 3,080.00	
Travel:	$ 5,525.00	
Other Direct Costs:		
Telephone	$ 1,200.00	
Postage	480.00	
Supplies & Materials	4,100.00	
Promotional Activities	500.00	
Printing & Reproduction	1,200.00	
Finance Office	15.00	
TOTAL OTHER DIRECT COSTS	$ 7,495.00	
GRAND TOTAL	$ 60,820.00	

TABLE III.4.2 →

ALABAMA RESA
AESP BUDGET
July 1, 1974 - August 31, 1975

Project Personnel	
Project Coordinator	$ 17,280.00
Director Hire	
Research Assistant	10,800.00
Secretary	5,280.00
Accountant	1,842.00
Accounting Assistant	1,392.00
TOTAL	$ 36,594.00
Personnel Benefits	$ 4,025.34
Consultant and Contract Services	$ 7,660.00
Travel	$ 5,490.00
Instructional Material	$ 3,000.00
Direct Costs	
Office Supplies	$ 600.00
Postage	1,000.00
Printing and Reproduction	1,200.00
Telephone	1,200.00
Office Rent	2,400.00
Office Equipment Rent	1,600.00
TOTAL	$ 8,000.00
Workshops/Promotional Activities/Conferences	$ 500.00
GRAND TOTAL	$ 65,269.34

Part IV - Extending the Analysis

As mentioned earlier, the cost data collected from the participants in the demonstration is of limited use in extending the analysis. The FRMS and ARC data do not give a complete picture of the demonstration. At the least, non-terrestrial costs will have to be incorporated into the analysis just to approximate the total "bill" of the demonstration. Last estimates for contributions "in kind" for the different receiving sites should also be included. This work is underway and will supplement the present draft.

One of the tasks the Educational Policy Research Center is planning to undertake is estimating the costs of various hypothetical satellite educational service delivery systems. Using the cost data obtained from the demonstration's participants as a basis for these cost estimates would yield estimates of dubious value. The costs associated with the operation and organization of a given system are likely to differ from those associated with an experiment. Such a hypothetical system could be large enough to capture economies of scale, and because it would be a consumer of a considerable amount of technical goods, it might even induce invention and innovation in the goods or in the production of the goods it consumes. Such circumstances imply cost savings that would not be reflected in the demonstration's costs. Generally, the conditions surrounding the implementation and operation of an actual system should differ markedly from those surrounding an experiment. However, by combining demonstration data with other data estimates can be made.

However, cost analysis by itself is a somewhat empty practice. If someone told you it cost ten million dollars to produce enough X for every person in the United States, it is simply an interesting(?) fact. You have no conception of the benefits that the production of so many Xs will bring.

Furthermore, it may be cheaper to produce enough Ys that will confer just as much benefit to society. The same quandary exists in a cost analysis of a satellite education system. The dollar value of services obtained by society by investing in a satellite would be difficult to judge. However, cost estimates can be derived for alternative means of deliverying the same basic services. The comparing of costs of alternative systems under varying assumptions and conditions is a continuing research task.

APPENDIX

WORKING PAPER ON
THE CONTEXT AND OPERATION OF THE AESP

Gus Root

The Appachian Education Satellite Project (AESP) has been planned and carried out with the involvement of a large number of organizations, individuals and technologies over several years. One of the major themes of this report will be that it is impossible to understand and appreciate the nature and functioning of the AESP without perceiving the project within the long range perspective of the philosophies and activities of these intertwining organizations. Similarly, the significance and contributions of the separate components of the AESP, particularly the satellite, are best understood within the context of the larger system within which they perform. The sections of this paper have been written to lead to and support the conclusions that:

a. Much of the success of the AESP has been due to the "symbiotic" relationships established among organizations already serving the educational needs of Appalachia,

b. While some of the success of the AESP in its short time of operation may be attributed to its ability to cross or ignore certain lines of traditional jurisdiction and involve only selected governing organizations, the lack of involvement of other organizations, such as State Education Departments and the main structures of the ARC, might prove to be a limitation on future satellite-based activity in this region.

c. The satellite (ATS-6) has played a significant but replaceable role in the instructional program, and a "catalytic" role in achieving a rapid increase in the options for in-service teacher education in remote Appalachian communities.

I. The Historical Context of the AESP

1960-1967: The Founding of the Appalachian Regional Commission, ARC.

From 1960-1967, the ARC grew from a concern of the Conference of Appalachian Governors (CAG), through the passage of the Appalachian Regional Development Act (ARDA), in 1965, to the Commission which began administering grants-in-aid in 1967. Initially, the purpose of ARC was the promotion of the economic development of Appalachia through two principal functions: making policy for and administering Federal programs of aid to the region, and carrying out a "brokerage" function (skilled lobbying in a legally sanctioned cause) on behalf of the region. The emphasis was on finding solutions to some of the problems that were common throughout the region: widely dispersed population, inadequate road systems, low tax base, seriously depressed income levels, and limited health and educational services to the communities. The early programs of the ARC gave major support to the building of highways and a cluster of other functions: health, land stabilization and conservation, erosion control, timber development, mining area restoration, the construction of sewage treatment works and vocational education facilities, and underwriting certain administrative functions for organizations established to meet certain local needs (such as the RESAs, as will be described below).

The organizational structure of the ARC provides for the active role of the participating states in determining the policies of ARC. Each state is represented by either the Governor or his designee; although the governors are the formal members of the Commission, the work of ARC is carried out by the Governor's appointed representatives. The Executive Committee of ARC consists of the Federal Co-chairman appointed by the President, the States' regional representative (a full-time Washington Official) intended to be co-equal with the Federal Co-chairman, and the Executive Director. Coordination of the ARC's programs is the primary function of the State Governors, exercised through an annual developmental plan which identifies the areas of greatest potential growth within the states.

1967-1969: The Expanding Interest of ARC in Education

In 1967, an educational group and an Education Advisory Committee were formed within the ARC. Several proposals were written, and a $200,000 planning grant was obtained to support an educational survey of the Region's most pressing educational needs. In 1969, the ARC commissioned a private contractor to carry out this survey and report its results. Approximately 32,000 educators were questioned throughout the 13-state area. In November 1969, the survey report identified five major areas of high priority educational needs:

1. A wide range of cooperative actions among the school districts and divisions in the Region. This need led to the formation of Regional Educational Service Agencies (RESAs) to serve multi-county school systems which could not afford, individually, the special services and materials needed.
2. Increased activities for early childhood education (involving parents and pre-school children), and career and vocational-technical education.
3. In-service education for teachers at all school levels from kindergarten through high school--because teachers were academically isolated, and there was an obligation to bring new competencies to existing teachers.

4. Improved programs in the areas of academic and occupational guidance and counselling.

5. Increased help in developing school management information systems, and in making most effective use of available State and Federal resources.

1970-1973: ARC and the Satellite Demonstration

By 1970, there was an increased educational thrust to ARC priorities and a new section in the Appalachian Regional Development Act (ARDA). There was a strong "vocational" emphasis to this thrust.

When the Educational Satellite Communication Demonstration (ESCD) was first being considered, the ARC was ambivalent about involvement. The ESCD appeared to be a complicated project and suggested an organizational structure that is not common within ARC; however, it provided considerable monies for some of the high priority educational needs of the Region. ARC agreed to consider participation in the ESCD on the basis that only Federal monies were to be used for all Appalachian activities.

The 1971 proposal for participation in the ESCD grew out of ARC meetings that involved an Advisory Committee (including public school, RESA and university persons from throughout the region) who helped determine the needs to be met through the project.

The Appalachian Education Satellite Project (AESP) was planned to establish a new "symbiotic" system among existing agencies, rather than setting up new organizations and facilities. All existing RESAs were invited to make written and oral presentations on how they would propose to function if participating in the AESP. Seventeen RESAs made application.

Five criteria were used by an Advisory Panel in selecting the participants:

1. the type of the agency requesting participation and its geographical location;
2. evidence that they had identified a local need for teacher in-service education;
3. the availability of appropriate technology within the RESA;
4. the availability of adequate leadership;
5. strong linkages with other, existing and complementary programs.

The ARC Education Director, with the assistance and advice of the Advisory Panel, selected five "main" RESAs, each to have primary responsibility for a "triangle" of three receiving sites. Three of these five triangles included receiving sites in two different states in a deliberate effort to stimulate Inter-state cooperation among the RESAs. Within each triangle of three receiving sites, the main RESA was designated as an "intensive" site as it would both receive the transmitted video signals from the ATS-6, and communicate interactively with persons in the broadcasting studio by teletype and by voice via the ATS-3. The other two sites were designated "receive only" locations in that they would receive the ATS-6 signals but could communicate with the studio only by sending messages by teletype (via telephone lines) to the main RESA for relaying to the studio.

Contracts were prepared for the five main RESAs, specifying the organizational structures for local AESP activities, the provision for consulting faculty from local universities, and time schedules for specific activities and reports. In two of the five triangles, the main RESA contracted with two other RESAs to organize and conduct local AESP activities. In two other triangles, the main RESA contracted with one other RESA and was responsible for organizing two different receiving sites. In the fifth triangle, the main RESA retained responsibility for all three separate receiving sites. The eleven RESAs selected for involvement in the AESP represented a mix of both sophisticated and newly-formed RESAs scattered over the Appalachian Region from New York to Alabama.

In these AESP functions, the ARC was performing in an atypical manner. Its preferred mode of operation has been to provide brokerage functions and serve as a source of advice and technical assistance for the states in preparing and processing proposals to various Federal agencies. Normally, the ARC has not assumed responsibility for administering and operating Federal categorical grants and programs, itself.

1973: Formation of the Resource Coordinating Center, RCC

The ARC Education Director sent a Request for Proposals (RFP) to universities within and adjacent to the Appalachian Region, inviting expressions of interest in preparing, distributing and evaluating an educational program for the AESP. The University of Kentucky was one of eleven organizations that submitted proposals.

The ARC-RFP was received by the President of the University of Kentucky and forwarded to Dean Wimberly Royster (Dean of the Graduate School and Director of the University's Research Foundation). The Dean invited a large number of persons with potential interest in the project to meet and consider the possibility of organizing to develop a proposal that would meet the required specifications. There was a strong feeling within this group that a proposal should be prepared. Dr. David Larimore was asked to coordinate the proposal writing activities within the available 2-3 week period (his title at that time was Coordinator of Research in the College of Education). The submitted proposal called for the formation of a team of educators, evaluators and media specialists, most of whom were already associated with the University of Kentucky with experience in serving the Appalachian Region. In addition, the University also proposed investing some of its own resources in the project, because the activities would also serve to meet some of its long range goals. With the assistance of an Advisory Panel, the ARC Education Director awarded the Resource Coordinating Center (RCC) contract to the University of Kentucky.

A Continuing Theme. One of the important themes observed in this historical review of the ARC and the AESP has been the consistent effort to build new relationships among existing organizations and persons who were already performing within on-going organizational structures. This new "symbiotic" structure has been a feature that has made a major contribution to the effectiveness of the project.

Evidence of this major theme is to be seen in (1) the establishment of ARC as a new way for states to work together toward common goals, (2) the development of RESAs as a way for school districts to achieve goals through cooperative efforts, (3) the use of the RESAs as the primary distribution system for the AESP program, (4) the selection of a university-based group to function as the RCC, with many of the key personnel still connected to the university, and (5) the continuing involvement of persons who were involved in the early stages of the project. It is significant to note that four members of the proposal writing team for the University of Kentucky became component directors within the RCC: for reading, four-channel audio, television production and broadcasting, and project management. In addition, the individual chosen as Director of Evaluation was a University of Kentucky faculty member, released for this project. The two producer-directors chosen to work with the career education and reading components had also been employees of the University (one began working on the RCC payroll and the other participated as part of the University's "in-kind" contributions). Component directors for the career education and information systems components were recruited from other institutions.

In the beginning, and in the on-going activities of the RCC, there has been evidence of strong and continuing support from Dean Royster and other members of the University's administration. Critical times for this support were in the initial preparation of the proposal, at the time of the major transfer of overall responsibility for the AESP from HEW and NIE, and at the end of each of the separate funding periods. This type of support may have been possible only within the strong organizational continuity surrounding the AESP.

The Pressures from Time Schedules

The entire AESP, and the RCC in particular, has always operated under a severe "time crunch", and has constantly sought answers to the question, "What can we do well in the limited time available?". The sources of these time pressures have included the tight and inflexible launch schedule for the satellite, the nature of the complex topics which were the subject of the educational materials (reading and career education), and some unfortunate shifting of personnel within the RCC (as will be described later). In a period of approximately 12 months, there was a 3-month planning phase and 9-months for the development and production of 24 video tape programs, 8 broadcast seminars, 24 sets of ancillary materials, 24 sets of four-channel-audio-question-answer broadcasts, a system for the computer-based search and dissemination system, and a formative and summative evaluation system.

Site Visits

Compared to the NIE "site visits" experienced by the two other ESCD projects (conducted by the Federation of Rocky Mountain States out of Denver, and the Governor's Office of Telecommunciations out of Juneau), the visits of the NIE evaluation teams to the RCC in Lexington, Kentucky, have gone relatively smoothly. Even so, each site visit was followed by a re-allocation of resources among the project activities: the addition of special personnel in the studio, additional management assistance, and reduced support for the Information System Component of the RCC. The RCC's activities and budgets were re-negotiated following each of the major site visits. Despite apparent efforts to reduce RCC budgets, the overall expenditures rose from an initial estimate of $1.06 million to a final level of about $1.5 million.

October 9 & 10, 1973: NIE Site Visit to the RCC (Report dated 11/7/73)

The site visit team consisted of four persons from NIE, a management consultant, and a director of educational television broadcasting. The team's report indicated a detailed study of the proposed and actual activities and personnel. Positive comments were made about the reading and career education components, the TV production facilities and personnel, the concept of RESA involvement, and ARC's role. Concern was expressed about certain aspects of the project: the "time crunch"; the 4-channel audio component (it might be done by audio-cassette); the magnitude of the Information Systems component (34% of the proposed budget, not all course related); the needs of project management for additional administrative assistance; the need for a full-time evaluation manager with assistants; and the need for contingency plans by the RESAs.

April 8 & 9, 1974: NIE Site Visit to the RCC (Report dated 5/29/74)

The same site visit team returned, except for the director of ETV. Again, each of the project "components" was reviewed. A series of recommendations were made, the strongest of which included: immediate attention to the slipped schedule for the fall course in career education; unacceptable "turn-around time" of 2-3 weeks for teachers' requests for information and materials from the computer-based information systems; the inordinate amount of work scheduled for the evaluation component; and the need for tighter management control over the project. (It is appropriate to mention, here, that steps were taken by the project staff to meet these concerns.)

Following this site visit, the ARC Project Director wrote to NIE protesting certain aspects of the visit--suggesting that the team lacked understanding of the original proposal and the material provided, and appeared to have a prior commitment to reduce the level of NIE support.

Other RCC Visiting Persons and Teams

Since AESP start-up, there has been a succession of consulting groups and interested persons visiting the RCC, some of whom have written reports on their observations and conclusions. These reports will not be reviewed here, except to indicate that the reports that have been read do not appear to raise issues that have not already been considered in this review.

Observations on the RCC

The RCC has been an organization of professionals (all the way from the Dean of the University of Kentucky Graduate School to the film crews), most of whom have had long-term commitments to the overall goals of the program (improving education for the remote areas of Appalachia) and short-term commitment to this present project. Many of the principle contributors have been "borrowed" for the duration of the project; and this is seen as both a strength and a limitation. The policy of recruiting competent professionals for limited assignments to highly specialized tasks appears to be particularly well-suited to an educational organization whose outcomes can be structured as a series of discrete units having relatively fixed content and time-duration limits. Very competent persons could be "borrowed" for a special project such as the AESP, while still maintaining their regular university affiliations. In contrast, if full-time professionals had been hired, with the RCC as their only professional affiliation, they would have had an additional concern for their own long-term careers in and through this kind of project.

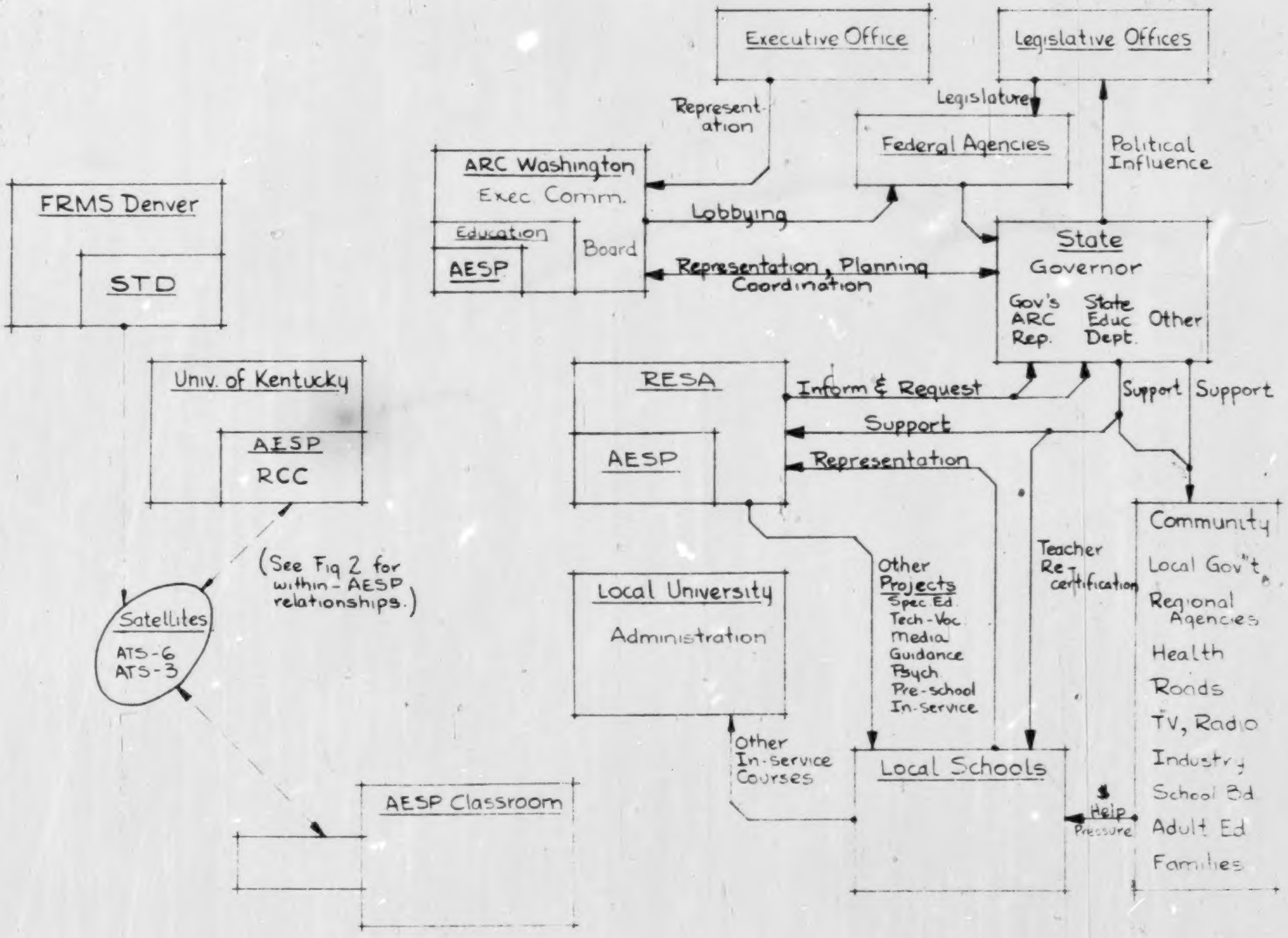
On the other hand, two types of structures appear to be required for effective utilization of university personnel and faculty members "on-leave" for their normal activities: (1) a continuing cadre of persons skillful in integrating faculty competence, the educational needs of the Region, and the in-house demands of production and evaluation, (e.g., project administrator, administrative assistants, and supporting staff), and (2) a series of Advisory Panels, each with diverse positions within each project activity and course content area, to be sure that the most competent persons are selected for short-term assignment to the project, and that course materials are subjected to content and method reviews by appropriate Advisory Panels as well as field reviewers throughout the Region. The beginnings of these two organizational structures were observed within the present RCC, and could be considered for the formal structure of any continuing program.

II. The Organizational Environment of the AESP

Early in the history of the AESP, it was decided to conduct the project through existing organizational structures which could be modified relatively easily to incorporate the goals and activities of the AESP. Such new activities had to be established in the crowded and competitive universe of existing organizational goals and activities. In terms of this project, the benefits to be derived from the AESP for the ARC, the states, the University of Kentucky, the RESAs and the local communities had to be equal to or greater than the costs and risks of possible losses. The benefits would seem to be desirable in terms of new learning and improved attitudes in both teachers and their pupils, the increased status, power and satisfaction of persons in the various organizations involved in the project, and the additional resources provided for participation (money, facilities, time and access to talent). The costs and potential losses associated with the project would be the inverse of the benefits noted above. Apparently, there were two quite different thrusts to the ARC-AESP organizational development. On the one hand, it was thought to be advantageous to use and build upon existing organizational structures (University of Kentucky, RESAs and school districts) to facilitate the introduction of new ideas and materials directly into schools and classrooms over a broad geographical area. On the other hand, certain organizations and techniques were used (NIE, NASA, the ARC, and a satellite whose signals crossed state lines) to by-pass certain organizational structures and vested interests which might have been roadblocks or delaying factors relative to the achievement of project goals.

Figure 1 illustrates some of the major organizations and activities which constituted the organizational environment of the AESP. A brief description of these agencies and activities will follow. In addition to the within-AESP relationships which will be shown in Figure 2 later, Figure 1 attempts to identify a network of influences on the ARC, AESP, RESAs and local schools, stemming from federal, state and local structures, and providing the organizational context for the AESP.

The interaction of federal and state influences on the ARC is apparent in its internal organizational structure. The Executive Committee of the ARC is made up of the Federal Co-chairman appointed by the Federal Executive


Executive Office
Legislative Offices
Represent-ation
Legislature
Federal Agencies
Political Influence
ARC Washington
Exec. Comm.
Education
AESP
Board
Lobbying
Representation, Planning Coordination
State
Governor
Gov's ARC Rep.
State Educ Dept.
Other
FRMS Denver
STD
Univ. of Kentucky
AESP
RCC
RESA
AESP
Inform & Request
Support
Representation
Support
Support
Teacher Re-certification
Community
Local Gov't
Regional Agencies
Health
Roads
TV, Radio
Industry
School Bd
Adult Ed
Families
(See Fig 2 for within-AESP relationships.)
Satellites
ATS-6
ATS-3
Local University
Administration
Other Projects
Spec Ed
Tech-Voc
Media
Guidance
Psych
Pre-school
In-service
Other In-service Courses
Local Schools
$
Help
Pressure
AESP Classroom

g Root
6-75

Fig 1 The organizational context of the AESP

Office, the rotating States' Co-chairman who is one of the governors of the involved states appointed by the other governors, the permanent States' Regional Representative appointed by the governors to be "co-equal" with the federal member of the Executive Committee, and the Executive Director. As indicated earlier in this report, the major functions of the ARC are concerned with the coordinated planning for the development of the represented states, assistance in preparing and processing requests for developmental projects for the states, and skilled lobbying in support of those requests; educational concerns and the AESP were smaller, late-arrivals in this organization. Thus the AESP operates within this network of technical and political structures, being somewhat of a "maverick" in that it is, itself, an operational project serving multiple states, rather than a project designed to assist individual states in conducting their own operations (which is the common mode of ARC operation).

The RESAs also exist within a mix of influences from the ARC, federal and state agencies, and the local districts, schools and communities being served. Each of the RESAs visited was responsible for a host of other projects in addition to the AESP, including: technical-vocational education, special education for handicapped children, early childhood programs and pre-school activities, psychological services and assessments, guidance and counseling, in-service teacher education (such as the AESP), ausio-visual services, and others. The RESAs were continuously involved in proposing and conducting a variety of eductional projects for their constituents, and the AESP has been one of the shorter-term projects in which they have been engaged.

Teachers, supporting personnel and administrators who have participated in an AESP course have chosen to expose themselves to it as one along the many community events that influence their lives. Many of these organizational factors also interact with the within-AESP events, to be described later, to affect the outcomes of the AESP.

III. The Functional Relationships Within the AESP

The preceding reviews have been presented to provide an historical and organizational context within which to view the more detailed and more immediate activities of the AESP, which will be described in the following sections of this paper.

The three central themes of this portion of the report will be:

1. The satellites ATS-6 and ATS-3 have been significant but replaceable components of the AESP instructional system. They were significant in that (a) their presence and their tight time schedules stimulated persons and organizations to make decisions and take actions that would have been unlikely in other circumstances, and (b) they facilitated activities that, under normal circumstances, would have been difficult to achieve in other ways. They were replaceable components of the instructional system in that the satellites and their associated hardware constituted only one of many elements contributing to instructional outcomes, and that much of the information distributed by satellite could have been transmitted by other means, (whether it would have been distributed by other means will be discussed later).

2. The major factors contributing to the successful operation of AESP in designing, producing programs and recruiting and retaining students have derived from the network of educational agencies and information distribution systems functioning within the Appalachian Region.

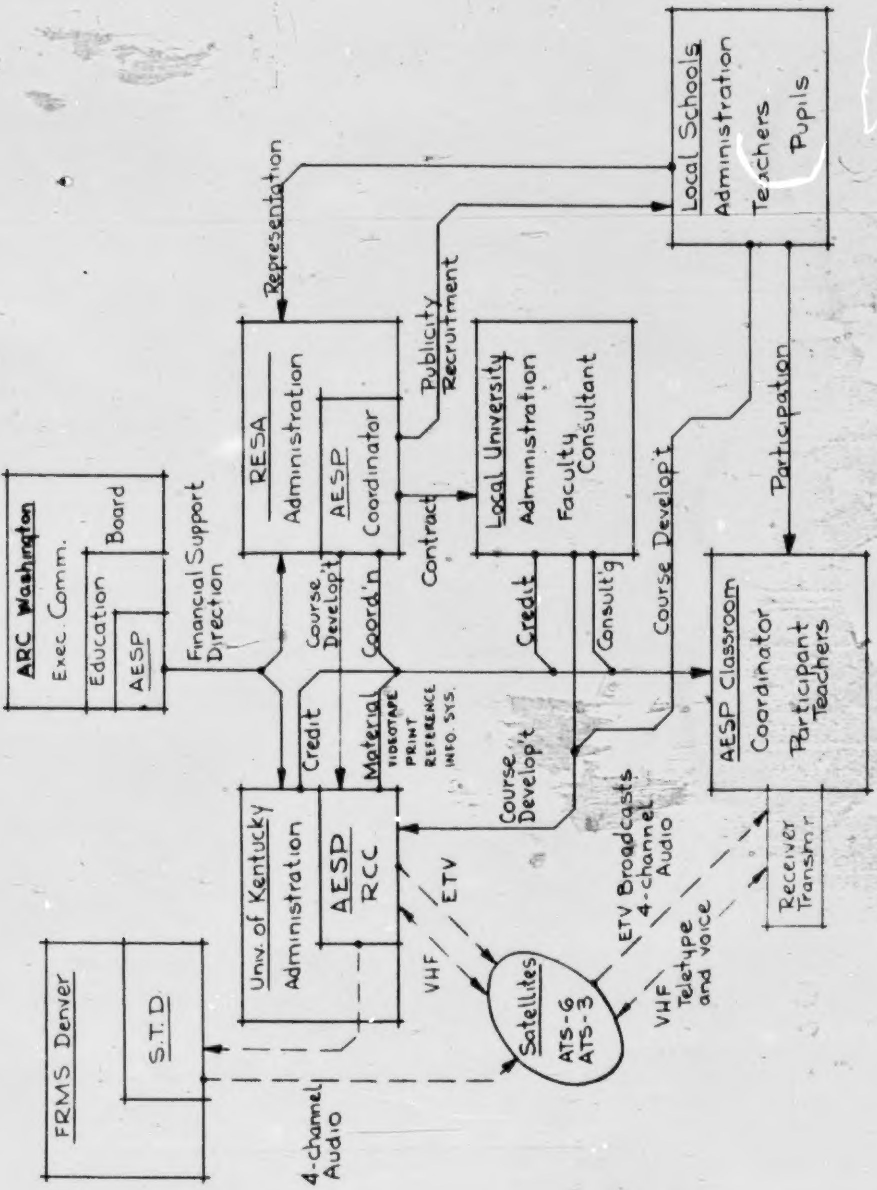
3. Future developments in Appalachian education are likely to find increasing use for sophisticated telecommunication systems (including satellites as they become more available). This

> demonstration has shown that satellites *can* be used in the distribution of educational programs to remote areas and will make it more probable that they *will* be used again. Even so, it is held that the nature and functions of the institutional relationships established among existing educational organizations and professionals will be the major determinants of the quality of any future educational projects in the region.

Many agencies and organizations have contributed to the effectiveness of the AESP. These relationships are not easily described or shown graphically. Figure 2 illustrates a common pattern of flow for resources and information into a typical AESP classroom. The following paragraphs will describe the components and relationships displayed in Figure 2, in order to emphasize the complexity of the network of influences acting to provide in-service education to teachers at selected sites in Appalachia. But even this moderate degree of complexity is still insufficient to provide an adequate explanation for the performance of the AESP; the project must also be seen in both its historical context (as described above) and in its current organizational context, as shown in Figure 1.

The ARC and the AESP

Through the NIE grant, the Appalachian Regional Commission (ARC) received financial support for the operation of the Appalachian Education Satellite Project (AESP). During the life of the project, the ARC provided overall managerial direction and financial resources to the participating RESAs and the Resource Coordinating Center (RCC) at the University of Kentucky, and provided specifications for the performance of the four-channel audio components of the program as these were relayed to Denver for broadcast.


ARC Washington
Exec. Comm.
Education
Board
AESP
Financial Support
Direction
RESA
Administration
AESP
Coordinator
Representation
Publicity
Recruitment
Local Schools
Administration
Teachers
Pupils
Local University
Administration
Faculty
Consultant
Contract
Course
Develop't
Coord'n
Credit
Consult'g
Course Develop't
Participation
AESP Classroom
Coordinator
Participant
Teachers
Credit
Material
VIDEOTAPE
PRINT
REFERENCE
INFO. SYS.
Course
Develop't
Univ. of Kentucky
Administration
AESP
RCC
ETV
VHF
ETV Broadcasts
4-channel
Audio
Receiver
Transmtr
Satellites
ATS-6
ATS-3
VHF
Teletype
and voice
FRMS Denver
S.T.D.
4-channel
Audio

Root
6-75

Fig. 2 Functional contributions to AESP courses.

The major development and dissemination activities of the project were conducted by the RCC and the RESAs, with overall coordinating responsibility retained within the ARC. Regular meetings of the major project personnel from the RCC and the RESAs were organized by ARC/AESP at some central location, and these contributed to the feeling of shared involvement in a significant project. Figure 2 shows this central coordinating function of the ARC for the AESP.

The RCC: Its Program Components and Operations

The RCC organized itself into "components", each having responsibility for a different aspect of the educational program. Coordination among these components was achieved in three ways: (1) through the administrative decisions and action of the managerial component, (2) through frequent staff meetings in which goals, problems and proposed solutions were shared, and (3) through personnel interactions among staff members.

The TV Production and Broadcast Component. The University of Kentucky already had a fully equipped TV and film operation, and the Director of Media Services participated actively in preparing the initial proposal for the AESP/RCC. The Media Services were then providing educational support to the University, and some of organization's personnel were diverted for the preparation, production and broadcasting of the AESP materials; additional personnel were also hired. An experienced producer-director from Media Services worked closely with the content expert in each RCC content-component to develop programs for the broadcasts. The relationships between the producer-directors and content specialists was sufficiently close and prolonged that neither exercised "final authority" over the finished products: rather, each learned from the other and the result was a shared sense of responsibility.

The producer-directors regularly accompanied a content expert on trips to prepare for field-filming, and brought film crews into classrooms throughout the Region to record the performance of selected teachers working with pupils and talking with the content expert. Film clips from the field visits were sprinkled through the broadcasts and were well received by the teachers participating in the AESP in-service courses.

The Reading Component. As a University of Kentucky faculty member with expertise in Reading, Dr. Lowell Eberwein had been invited to participate in the initial proposal development for the RCC. Upon receipt of the RCC contract he was, therefore, in a position to begin work immediately on the development of the reading courses. Very early in this development, he visited each of the five main RESAs and discussed course content outlines with a variety of persons in the field; many of their suggestions were incorporated in the outlines.

More than passing mention is warranted of the series of reviews and modifications that the developing scripts received. In spite of tight time schedules, the early versions of the scripts were sent out for field review by selected teachers, by personnel in the RESAs, and by the "consulting faculty" who were under contract with the main RESAs to act as resource persons to the local AESP classrooms (not teaching the classes, but acting as advisors and back-up consultants to the classroom coordinators).

Feedback and comments received from the field were used in making revisions in the scripts whenever they were received within the announced deadlines. Further, opportunities were provided during the broadcast courses for additional feedback and suggestions through eight interactive seminars (three during the summer of 1974 and five during the spring of 1975); so far as possible, appropriate modifications were also made.

The participating RESAs and consulting faculty were asked to identify practicing teachers who could serve as "models" of certain teaching techniques on the video broadcasts. Dr. Eberwein visited approximately 100 selected teachers distributed throughout the Region, returned to approximately 40 of these teachers' classroom with the cooperating TV producer-director (Mr. Paul LeVeque) and, together, they took a full filming crew to the classrooms of teachers whose approaches to reading would be used as examples of "model" techniques in the ETC broadcasts. In comments received from visits throughout the Region, this practice of using film clips of teachers working with their own pupils from classrooms all over the Region, was uniformly regarded as excellent. Three aspects of these film clips warrant comment:

1. The teachers shown were not "typical" in that they were selected to be "models" of techniques that were introduced and discussed in the course. At the same time, it was recognized that they were "real," in the sense that the teachers and pupils were actually doing what was being shown.

2. The film crews were well received in the classrooms by both teachers and pupils, and were unobtrusive in the sense that their presence did not radically influence the demonstration of a particular approach. The film crews were apparently good "ambassadors" for the project.

3. AESP participants displayed both positive reactions to the film clips and occasional skepticism as shown by light-hearted comments such as "Those kids were on their best behaviors," and "What was the rest of the class doing during this teacher-pupil testing?" The story was told of one participant watching a clip and saying, "Well, that couldn't be done, here!", only to have the title appear across the bottom of the screen showing

> that the incident had taken place in that very district. Both the positive and somewhat-skeptical reactions to the clips could lead to constructive discussions, when directed by an effective course coordinator.

In an effort to explore the issue of the relative desirability of either (a) a televised expert and a non-specialized classroom coordinator, and (b) a live, on-site instructor who was also a content expert, the RCC Evaluation Component surveyed a group of teachers participating in the reading course. Approximately equal numbers indicated that they liked the televised as much or better than a live instructor, as indicated that they would like more chance to ask Dr. Eberwein more questions, they did not feel it necessary to have someone like him conduct the regular class sessions.

Thus, despite an expressed desire by some students for more personal contact with an instructor-expert, there was no clear-cut preference for an on-site as compared with a televised subject matter expert. This would suggest that the large scale dissemination of educational materials might well be an appropriate way to support a local instructor who is not a content specialist.

Because there does not appear to be any clear-cut preference for a televised as opposed to an on-site instructor, program policy decisions could be made on grounds other than student preference. These might be expediency or cost.

The Career Education Component. When the RCC contract was awarded, a career education specialist from outside of the University of Kentucky was recruited and appointed Director of the Career Education Component. In contrast to the immediate start-up of the material development for the

Reading Component, the recruitment and orientation of the Director further reduced the already short time schedules for the Career Education Component.

The Director of Career Education began much the same process as used in the Reading Component; proposed course outlines were taken into the field to be read by and discussed with teachers, RESA personnel and consulting faculty. School sites were selected for possible filming. As the initial scripts were being developed for the summer 1974 course, the documents were circulated for field review. The predominant feedback from reviews of these scripts indicated that the material was not likely to be appropriate for the intended audience, and would be impractical for video-module presentations (both in terms of the content and length of the proposed scripts).

Responsibility for this educational component was reassigned to an existing RCC staff member, Ms. Betty Bowling, to organize the career education scripts, course materials and consultants. The course materials, scripts and video-tape modules were prepared and the final deadlines were met for the summer Career Education course. The 12 half-hour video-taped units included interviews with career education authorities, teachers, parents and other community and business representatives. Filming was done in order to include film clips in the broadcasts of teachers and pupils using career education concepts. Career education resource materials were distributed to be used in the AESP classrooms, and the four-channel audio technique (see p. 26) was used to review the material and test the participants' learning. Four live-interaction seminars were moderated by the RCC Director, Dr. David Larimore, to provide opportunities for the participants to question and interact with selected career education authorities and practitioners.

ETV broadcasts for the fall 1974 career education course consisted of 16 one-hour, live-interaction seminars hosted by Dr. Rupert Evans, faculty member at the University of Illinois and a widely recognized authority in career education.[1] Experienced career education authorities and practitioners from throughout the country were invited to the TV studio in Lexington, Kentucky, and participated with Dr. Evans in presenting their experiences and observations, and responding to questions sent to the studio by teletype and voice via VHF from the five main RESAs, and relayed from the other ten sites. After the first few eeeks of the course, Dr. Evans also remained in the studio to talk with participants over the ATS-3 VHF system responding to those who called in (the RCC reported that there were always some participants on the system with questions). Comments received by the RCC during the first third of the course (through regular feedback from the classes) lead to some changes in format. As recommended in the feedback, more examples were shown in film clips of practitioners using the career education ideas. Interviews with teachers in three of the fall career education classes, and discussion with participants and site coordinators after this course, indicated that the negative reactions that built up during the first weeks of the course were largely dissipated as a function of several factors, including efforts to change the TV presentations as a result of feedback, the supportive behavior of most site coordinators, and the productive work of the participants in adapting class ideas to their own teaching. As in the summer course, even with the reservations about the over-use of the panel-discussion format, the career education course was relatively meaningful for the participants. Three outcomes of the course appeared to be (1) some experiences in the teachers' own classrooms that had been planned and conducted on the basis of the course concepts, (2) project work that had been done by some teachers' pupils in local schools or communities, and (3) participants' ability to respond more appropriately to pupils when asked about the meaning of school activities for post-school work.

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[1] Live interactive programs were comparatively inexpensive and were used in order to estimate both their teaching effectiveness and audience reactions. In other words, they were an experimental test of low cost broadcasts.

The RCC Evaluation Component asked participating teachers about the results of the career education course for themselves; a substantial majority of those responding to this survey indicated that they had learned useful and applicable skills and were already using them in their own classrooms. Other responses to the RCC self-report survey were predominantly positive about the career education course.

Other RCC Components. Four other components were also incorporated in the RCC, to support the development and dissemination of the courses which were the major components of the center:

1. The Management Component was responsible for providing overall leadership and administrative support for the RCC. The major activities of this component included: interacting with the ARC, NIE, and other potential funding agencies performing public relations functions; preparing reports; coordinating activities with other university organizations contributing to the operations of the project; and other supportive functions. The management style adopted by this component

could be characterized as cooperative facilitation rather than firm centralized supervision. Early site visit teams strongly recommended that the small Management Component be increased, and a Deputy Director was obtained. This observer was favorably impressed by the supportive and integrative functioning of this component.

2. The Evaluation Component which performed a variety of formative and summative assessment functions for the project. Its principal activities included designing, administering and analyzing the data from measures of teachers' learning and attitudes relative to the courses and the overall project. This monitoring function provided information that was used to modify both course content and methods, as was felt appropriate within the limits of tight time and financial constraints. Early site visit teams were also concerned with the sheer volume of work planned for this small group of persons; regular reports of their activities and conclusions were produced and are available for examination.

3. The Four-channel Audio Component designed audio-only messages to be broadcast via the ATS-6 satellite to the participants following many of the video modules. All four audio channels were used simultaneously to present a problem situation with four alternative responses in multiple-choice format. Each teacher then pressed one of four buttons on a small box to hear feedback on the appropriateness of the selected response. The teachers also recorded their selection on a separate sheet for analysis by the Evaluation Component. The author of this report read the scripts for these messages, listened to several of them

in classrooms with the teachers, and talked with a small number of participants about this activity. The following conclusions were reached:

a. The RCC was trying out this approach on a very small budget; they had considered alternatives which were not implemented because of time and cost limitations.

b. The audio-only messages could have been delivered equally well by means other than the ATS-6 satellite (e.g., by audio tape, video cassette, print, etc.). It should be noted that an experiment using four-channel audio was requested in the original Request for Proposals issued by the federal government.

c. More work is required to learn the most effective way to prepare and deliver multiple-choice problem simulations for reviewing and testing achievement in instructional modules.

4. The Information Systems Component provided the participating teachers with access to several computer-based instructional resource systems. Teachers provided information on their objectives, subject area, grade levels and students, and the RCC used a combination of computer-based and manual search-and-retrieval systems to furnish teachers with information, activity lists and resources for their teaching. Initial plans for this component were to provide local libraries at each receiving site, but successive budget reductions eliminated these distributed libraries. Conversations with teachers in the AESP classrooms visited identified only a few who had used this information retrieval system, and three teachers who had submitted requests commented on the delays in getting feedback.

Thus, as shown in Figure 2, the RCC coordinated the development of materials for two basic types of courses (reading and career education) and provided for the distribution of both printed and broadcast materials. In addition, course work done by the participants was evaluated to certify the earning of graduate credit according to the academic standards of the University of Kentucky. Other universities near individual receiving sites used the University of Kentucky certification as a basis for granting credit toward the program requirements in their own graduate schools. A faculty member from the local university was a consultant to the RESA and had the option of reviewing each student's work (none elected to exercise this option).

The RESAs, Schools and Local Universities

The concept of establishing and using RESAs to support and improve the education in several adjoining school districts (or school divisions) arose early in the history of ARC's educational activities. Eleven RESAs, geographically dispersed throughout the Appalachian Region from New York to Alabama, have served as the major distribution network for the AESP program. In each of the five main RESAs, an AESP coordinator was appointed (approved by as well as supported by ARC, either full- or part-time); in three cases, this Coordinator was already an employee of the RESA and had been previously responsible for other educational projects serving the same communities; in the fourth case, the Coordinator was a faculty member from a nearby University with extensive media experience whose services were obtained on a leave-of-absence basis; in the fifth case, the Coordinator was newly hired for this position, with previous experience in satellite-related activities. As indicated earlier in this report, this network of main and ancillary RESAs (which had previously provided services to the educational communities prior to the AESP, and was simultaneously providing a variety of parallel and related services) was perceived by this observer as being responsible for some of the major contributions to the AESP (as well as some of the limitations which will be described later, such as wide variations in the activities of the course coordinators and the location of some RESAs at considerable distance from the AESP classrooms and the schools they served).

This observer visited each of the five main RESA (two days each), one ancillary RESA (one day), and two additional receiving sites (coordinated by personnel from the main RESAs). During these visits, conversations were held with the AESP Coordinators, four RESA Directors and other RESA personnel, one AESP Consulting Faculty from a local university, six school superintendents and 12 building principals in districts served by the RESAs, approximately 120 teachers participating in the current AESP courses and approximately 18 previous participants who were visited in their own work settings. These visits and accompanying observations led to the following tentatively held conclusions:

1. The RESA Directors were positive toward and supportive of the AESP. They saw opportunities for the continued use of the current AESP course materials, even without the satellite. In addition, three of the main-RESA Directors reported long range plans or expectations for a relatively sophisticated telecommunication network serving their

areas through ground-based systems and/or satellites (as they become more available).

2. Most AESP Site Coordinators were enthusiastic about their activities and results. Most reported that their AESP activities were highest around the beginning of each course and that they engaged in other related activities as their AESP responsibilities were less demanding, e.g., helping schools write proposals for funded projects, assisting other RESA personnel, etc. Generally the RESA-AESP Coordinator led the classroom sessions, except in Alabama where the RESA was responsible for coordinating three classrooms in three different school districts. In this situation, local superintendents had recommended teachers from the district to act as class coordinators. Contracts had been made with teachers to act as coordinator for not more than one AESP course; each was given an orientation to the AESP and the course materials. Reports on the effectiveness of these teachers and the estimate of this observer, suggested that this arrangement worked very well except when the teacher was well versed in the course topic and outspokenly advocated an approach different than the approach proposed in the course.

3. School administrators (superintendents and principals) were generally aware of and supportive of the AESP courses, although their knowledge of the courses was generally limited to the reactions of teachers. Administrators indicated that in-service courses were available if educators were sufficiently interested to travel to the classes (often distant) or live on-campus during the summers. Most locally

available courses were in educational administration, and good courses related to school topics were wanted. The administrators had heard good things about the AESP courses and wanted more "quality" courses like them. (One comment was most pointed, "We already have all of the mediocrity we need.") In some locations, particularly in the South, administrators exerted strong influence on which teachers participated in any aspect of the AESP (course development feedback, class participation, questionnaire feedback, class coordinator, etc.).

4. The participating teachers were generally positive toward both of the AESP courses, but considerably more so toward reading. Teachers from earlier reading courses (six were visited in their own classrooms) pointed to course materials from the course which were in current use and described projects which they had done based on course work. Former participants in the career education course (four from the summer and three from fall, 1974) also had course materials in their rooms but did not describe classroom activities which were based on course-related concepts; two guidance counselors who had participated in the career education course indicated that it helped them respond to students' questions about the world of work. Site coordinators described a number of projects that teachers and their pupils had completed as a result of their participation in a career education course. The RCC conducted a survey of teachers and their self-reports indicated that they were applying their newly learned skills in their own classrooms.

Local Universities and Faculty Consultants

AESP broadcasts were received at 15 sites scattered through the Appalachian Region. These sites were organized in five sets of three receiving sites (called "triangles"), with responsibility for each set assigned to a "lead" RESA. One responsibility of the lead RESA was the establishment of relations with one or more local colleges or universities and a faculty consultant for each of the two courses (reading and career education). The position guide for these consulting faculty members was finalized by representatives from the ARC, the RCC, and the RESAs at a meeting on February 12-13, 1974; contractual arrangements with these professors were made through the lead RESAs. The functions of these consulting faculty included: (1) giving feedback on course outlines and program scripts; (2) helping identify teachers who might be filmed by the RCC; (3) assisting the lead RESA in having the local university grant college credit for the AESP courses as conducted and monitored by the University of Kentucky; and (4) offering consulting assistance to the site coordinator relative to the conduct of the courses and participants' questions.

The activity level and contributions of these faculty consultants appeared to vary widely in the different locations. In two of the five triangles, the site coordinators spoke voluntarily of the regular activities of their consultants and this observer saw evidence (or heard teachers talk) of their regular involvement; this appeared to be a result of both the contract and the consultants' personal interests in field-involvement with teachers. In two other locations, it was indicated that the consultants were available as they were needed. In the fifth lead RESA, the consultants were described in terms of the help they had been in getting the program under way.

The Elements of the AESP Courses

In attempting to understand the contributions made by each of the different components of the AESP program, it was felt to be important to estimate the relative contributions made by the various elements of the courses. Some of the major, typical events of a class session will be described before noting the results of participants' estimates of the relative contributions made by these events to their learning from the courses.

1. The class sessions would usually begin with an informal period during which participants were arriving and settling in. There was considerable talk among the participants and RESA personnel (site coordinator, teletype operator and others). The teletype was usually active during this period; located in an adjoining room because of its potentially noisy interruption during actual class meetings.
2. As time for the broadcast approached, the coordinator began to adjust the television receiver, color bars appeared on the screen, and the participants moved to their seats. During the "pre-taped" broadcasts, there was generally constant attention to the screen with little or no movement or conversation among the class members. During

"interactive" seminars, the pictures and comments of a host and several panelists were broadcast and questions were solicited from members of the audience. Observations from having sat in "interactive" classes in different locations suggested that a typical pattern of activity was to have the site coordinator urge participants to write out questions, written questions were taken by the coordinator to the teletype operator in the adjoining room for transmission, with little if any conversation among the class members on the questions or responses transmitted over the TV until after the broadcast. In one seminar situation, a participant was dissatisfied with the response given to his first questions; he then submitted a follow-up question, which was also dealt with briefly. Questions that were submitted but not answered over the air, were given teletyped answers during the following week; these were posted on the classroom walls at subsequent class meetings. There appeared to be two quite different sets of observations and conclusions relative to these "interactive" activities: (a) the RCC and the RESA site coordinators reported the enthusiastic reaction of participants to the seminar question-answer period and to the typed answers posted on the wall; (b) this observer was impressed by the low level of spontaneous activity in the "seminar" classroom, the limited information that could be written on a small piece of paper for transmission to the studio, the limitations on the studio panelist in responding to a short written question in a severely time-conscious setting, and the limitations of typed responses delayed a week and publicly posted.

4. During three visits to AESP classrooms, this observer participated in 4-channel audio broadcasts. After the normal pre-taped ETV presentations, the ATS-6 satellite relayed an audio-only message[1] consisting of four case-study multiple-choice type questions. Each participant had individual earphones plugged into a small box with four buttons, one for each of the alternative responses. After marking the selected response on an answer sheet, each participant pressed the corresponding button on the box and heard either a confirming or correcting audio message. During the summer-1974 courses, the RCC evaluations noted that the pacing was too slow and, therefore, the pauses were reduced for subsequent courses; even so, this observer felt the pacing was still slow.

5. Homework projects were discussed and collected for transmission to and grading by the University of Kentucky. Observation of the intensity of these discussions and the care with which materials were submitted, suggested that these activities were quite important to the participants. In several classes, participants had brought examples of materials they had prepared for their own pupils, and these were shared and discussed briefly with the class.

6. After the "interactive" seminars, the studio host and panel members were available in the broadcast studio for further conversation with the five main RESA sites via the audio capabilities of the ATS-3 VHF

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[1] The problem description and question were broadcast on all four audio channels. After a pause for response, each separate channel broadcast either a confirmation or correction of the response selected by the student.

satellite. Although the RCC staff reported that the studio was regularly active in responding to participants from one or more of the five main RESAs, this observer neither saw evidence of the use of the VHF for post-seminar interactions with the studio, nor heard invitations from coordinators to engage in this type of dialog with studio experts.

7. Reference materials were provided by the RCC, sometimes for each participant to keep for personal use and sometimes for borrowing through the local library system after the course.

8. Participants had access to several computer-based search and retrieval systems which could provide them with suggestions and/or actual teaching materials and suggestions, if the participants would request assistance for particular topics, grade levels and objectives. Each site coordinator reported that such request had been made and processed, that the requests were infrequent, and that sometimes the time delays were disconcerting. Suggestions for free materials and addresses for other low cost materials were provided in the newsletter, "Tracker", which was distributed to both current and previous participants, and appeared to be appreciated; no data was available on the frequency with which teachers used this information.

9. In conversations with participating teachers, RESA personnel and administrators, persons were asked to identify the major contributing elements of the AESP. In addition to those noted above, a wide variety of other factors were also noted--some of which were unexpected: the site coordinator, the location of the course in a

community facility, free tuition, being with friends in the class, meeting the needs of the teachers for recertification, etc.

Thus, participants perceived many different characteristics of the AESP courses as being personally important. In six of the classrooms visited, and in most of the personal conversations with individual participants, the relative importance or weighting of the various elements of the course was explored. Because of the varying situations in which questions were asked, and the differences in the manner in which free responses were recorded, the data were not statistically analyzable. For the purposes of this report, it is appropriate to indicate two types of responses that participants made in these face-to-face contacts:

1. *All* components of the course were seen as important and almost inseparable, whether they were elements of the *instructional* program, parts of the *supporting* structure which made the instruction possible, or factors in the *community* which made it possible for the teachers to attend (e.g., minimum travel, a cooperative husband); and,
2. Three sets of factors were given differential weightings: (a) most weighting was given the materials which participants could take from the class and use in their own teaching and the homework activities where they had to do new things with children, (b) lesser weightings were given to in-class activities and the roles of the video broadcasts and the site coordinator, and (c) least weight was given to the teletype and the VHF systems.

In a questionnaire sent to certain AESP participants by the Educational

Policy Research Center (EPRC) (see a description of this Advisory Panel in previous EPRC reports), an item was included to further explore this issue of the differential weighting of five aspects of the instructional program: (1) the video-taped TV programs; (2) the printed materials accompanying the broadcasts; (3) the live interaction seminar; (4) discussion and other in-class activities initiated by the coordinator; and, (5) pre-program preparation, homework. Feedback on this item indicated that the panel assigned approximately equal weight to these components of the instructional program. Further data on the contribution of different aspects of the course to student learning may be obtained from the research reports of the RCC.

A Transition Statement

Three sets of factors are seen as influencing the outcomes of the AESP: the historical events out of which the ARC and the AESP have grown, the social-organizational context within which the AESP has operated at its various levels; at the level of federal, states, and local communities, and the many within-AESP factors that have been active during the life of the project. A major task of the kind of analysis being conducted by the Educational Policy Research Center is to conceptualize this network of interactive factors in such a way as to provide the foundation for a set of policy recommendations to the federal government concerning future support of and limitations on satellite-based projects to enhance education in broad and selected areas of the United States.

As the next step in this process of developing a broad base for such recommendations, it is appropriate to examine more closely the specific functions of the satellite as it contributes, in its own ways and in interaction with other factors, to the performance of this project. The final portion of this report will summarize some observations on the role of the satellite (the ATS-6 and, to a lesser degree, the ATS-3) in delivering in-service teacher education to selected areas of the Appalachian Region.

IV. The Role of the Satellite in AESP

During the visits and conversation which provided the data base for the report, a wide variety of thoughts were heard about the role and contribution of the ATS-6 satellite in the AESP. There was general agreement on many of these points of view, and some areas of controversy. Three issues will be developed in the following pages:

1. The satellite has been a motivational or catalytic factor in the AESP, facilitating the short-term goals of the project. Some characteristics of the satellite and the project may lead to long-term difficulties, if the project is extended or expanded.
2. The satellite was only one component of a complex instructional system (which, in turn, was a sub-system of the larger historical and organizational context). Its communication functions in this demonstration could have been performed by other information systems; the question of whether they would have been, is part of issue #1, above, and #3 below.
3. The satellite may have distracted attention from other elements of the AESP which may have contributed more to its effectiveness and may be easier to sustain at lower costs with less dependency on external support.

1. The Motivational-Catalytic Function of a Satellite

The satellite has undoubtedly played an important motivational role in the AESP demonstration. Tight deadlines and pioneering enthusiasm probably moved both organizations and individuals to make decisions and take actions they might not have made or taken under more ordinary conditions. But it may be one thing to permit or encourage a short-term glamorous project such as the AESP, and quite another to establish more permanent relationships with the complex network of schools, school districts, and state and regional educational agencies.

A new management structure was established which linked the University of Kentucky and the RESAs, and which appeared to provide benefits for both the organizations and individuals involved. These relationships could be relatively easily maintained and expanded.

But there were several organizations and persons which did not actively participate in the AESP which might want to play a significant role in any longer term project: the Governors' Representative to the ARC Board, personnel from the State Education Departments, administrators from local universities, and permanent personnel in the schools served.

ARC. Each of the AESP coordinators in the main RESAs made regular efforts to keep the Governor's Representatives to the ARC Board informed of local activities, but these Representatives had no directive role in the project. Developmental plans for each state in the Appalachian Region have traditionally been formulated by the separate governors and then integrated by the ARC Board and staff. The ARC has normally helped each state get funding to support its own developmental efforts. This normal pattern of flow for information, decision-making and support was not used in this project. Consequently, the goals and activities of the AESP were quite different from those normally undertaken by the ARC. It remains to be seen how a permanent project modelled on the AESP would be initiated and managed by the ARC.

State Education Departments. The AESP coordinators and the RCC also attempted to keep persons in the State Education Departments informed of the goals and activities of the project, with varying degrees of success. In each state, the Chief School Officer has major responsibilities for financial support to local schools, for local and state-wide curriculum and for teacher certification (and re-certification). Much of this normal network of flow for information, responsibility and support within individual states was not used in this project. Consequently, the Chief School Officers and deputies do not necessarily agree on the value of an AESP-type system of relationships among universities, RESAs and schools. It is quite possible that such an organization would seriously threaten existing zones of influence and control. In order to counter this problem it might be useful to show how in some states, the AESP was able to operate in conjunction with existing state departments of education.

Local University Administrators. Contacts were made with local universities through the RESA coordinator and consultancy contracts with individual faculty members. This relationship depended upon the interests and activities of individual faculty, and did not establish formal organizational ties with university administrators. Unless formal ties are established in future projects, university administrators are unlikely to perceive the AESP structure as an attractive means for achieving teaching and service goals in their communities.

Local School Personnel. AESP relationships with person in the local schools were developed in two ways: (1) through the personal contacts developed by the local AESP coordinator, and (2) through the formal structure of the RESA in which the local school superintendents were the chief members of the RESA Board of Directors. These two ties to the local schools were generally observed to be active and adequate, and it may be best that in-service teacher education through something like the AESP be seen as only one aspect of the services of the RESA. Nonetheless, more active involvement of local school personnel in selected aspects of this program (needs assessment, recruitment, outcome evaluation) could provide a broader base of demand and support for future efforts.

In conclusion, there may be two types of organizational-support problems arising from the dynamic and short-term nature of the AESP. First, the enthusiasm associated with the satellite technology as an attractive way to deliver educational programming may not endure--the "honeymoon" may come to and end, and the satellite may lose its motivational value. This phenomenon has been observed in applications of other forms of educational media, and may be anticipated here.

Second, the boundary-crossing characteristics of the AESP may be tolerated for a short-term glamorous project but resisted in a long-term program. In the short run, the project may not threaten some of the organizational structures which were by-passed. But the very success of the project in providing educational services directly to local schools may be perceived as a threat to state, regional and local agencies. Thus the short-term motivational advantages of the satellite for the AESP may have potential limitations for longer term programs.

2. The Satellite as a Component of an Instructional System

In this project, as in many other educational demonstration and research studies, it is unlikely that any single component of an instructional system could be easily credited with the primary contribution to the outcomes obtained. So it is likely to be with the satellite. At the present time, this observer takes the position that many factors (in the history, context and operation of the AESP) have contributed to the outcomes of this demonstration. While it would probably not be fruitful to attempt to measure the absolute magnitude of these contributions, it is still possible to estimate the relative magnitude of clusters of interrelated factors. In this context, it is estimated that those portions of the AESP that were directly related to the satellite (live interaction between the studio and remote classrooms, the motivational and time-pressure aspects of the ATS-6 in this project) were relatively less influential on the project's outcomes than those factors which were only indirectly or not at all related to the satellite (the existence of the ARC and the RESAs, the quality of the pre-taped video materials and the printed material delivered to the receiving sites). In addition, much (if not all) of the instructional uses of the satellite *could* have been done by other means (video and audio tapes, telephone, radio, etc.). Thus it is estimated that the satellite was not a necessary component of the instructional system established through the AESP.

On the other hand, when it has been asserted that much of what the satellite did in the AESP *could* have been done by other means, a common response has been "Yes, but *would* they have been?" Two things seem likely: (1) the services performed by the ATS-6 satellite for the AESP from 1973 through 1975 probably *would not* have been provided in the available time by any other means, and (2) other satellites *will* be available in the future as components of a growing telecommunication network linking many parts of this country and would be available for educational use. It will become increasingly important to know how to exploit the aspects of these networks that can best serve our educational systems.

In addition to the possible instructional benefits that may be derived from the use of a satellite, it will also be important to consider factors such as the *attractiveness to consumers* of satellite-based courses (space technology applied to classrooms), the *number of options* that can be provided for education in remote areas, the *educational quality* that can be achieved when courses or materials are distributed widely through a satellite system, etc. Therefore, policy recommendations on federal support for future educational uses of satellites will be based on these many considerations: motivational, organizational and educational quality.

3. The Distracting Effect of a Satellite

This observer has also been concerned with the possible masking effect of a satellite which is experimental and has been presented in a most dramatic way by NASA. This may distract attention from other important aspects of the AESP. It may well be that some of the non-satellite elements of the AESP have the following characteristics: (a) they may account for a major portion of the project's performance, (b) they may be continued or sustained even without a satellite, (c) they might require substantially less financial support than a satellite, and (d) they might make a future project less dependent upon massive external funding and more open to broad participation in the control and support of the program. Examples of such partially hidden characteristics might be the network of relationships among the RESA, the universities (including the University of Kentucky) and the local school districts, the use of university-based media services for the preparation and distribution of materials, and the interest of university faculty members in building relationships with local schools and using these contacts to enrich the course materials they prepare and distribute. The possibility of "tunnel-vision attention" to the satellite may divert effort from the further study and such potentially fruitful "side effects."

Conclusions

The performance of the AESP is best understood in terms of the historical development of the ARC, the organizational context within which the AESP was conducted, and the many within-AESP factors that influenced what happened in and through the courses. The AESP was organized as an atypical short-term ARC project supported by federal money. New relationships were established among some agencies already concerned with education in the Appalachian Region. In-service teacher education courses were conducted in 15 locations involving approximately 900 participants from New York to Alabama, during the summer and fall of 1974, and the spring of 1975.

The AESP has achieved some very desirable outcomes in demonstrating that

1. A set of organizational relationships can be established throughout a multi-state region, to develop an in-service teacher education in response to identified regional needs, and deliver this program to remote location in the region.
2. Courses provided through this organizational structure can be of such quality that participants can earn graduate credit at accredited universities.
3. Printed materials can be sent by ground delivery system to these remote sites to coordinate local classroom activities under the leadership of relatively untrained coordinators, to guide participants in meaningful extra-class activities, and to act as useful resource and reference materials in the participants' own classrooms after the course.
4. Technology can be used so that participants in graduate level courses in remote locations can have a form of meaningful interactive contact with persons and topical experts at a central location.

While many (if not all) of the contributions of the ATS-6 satellite *could* have been performed by other media or techniques within the Appalachian region, it is unlikely that they *would* have been within the time schedule of this project.

Future decisions on the use of satellites in educational development projects should be based upon many factors, including the motivational value of a satellite as a component of the system, the ability of an educational development and distribution system to be integrated with existing educational and informational systems throughout a multi-state region, and the function of a high-technology educational system to extend and improve the range and quality of services available to persons throughout the region served.